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BOARD OF EDITORS { Mr. Horace E. Smith, Chief Clerk Weather Bureau, Professors Henry A. Hasen, Thomas Russell, and Charles F. Marvin, and Mr. Edward B. Garriott, in charge of Review Room.

INTRODUCTION.

This REVIEW is based on reports for September, 1891, from 2,571 regular and voluntary observers. These reports are classified as follows: 158 reports from Weather Bureau stations; 118 reports from United States Army post surgeons; 1,721 monthly reports from state weather service and voluntary observers; 32 reports from Canadian stations; 179 reports through the Central Pacific Railway Company; 363 marine reports through the co-operation of the Hydrographic Office, Navy Department; marine reports through the "New York Herald Weather Service;" monthly reports from the local weather services of Alabama, Arkansas, Colorado, Illinois, Indiana, Iowa Weather and Crop Service, Kansas, Kentucky, Louisiana, Maryland, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New England, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, Washington, and Wisconsin, and international simultaneous observations. Trustworthy newspaper extracts and special reports have also been used.

CHARACTERISTICS OF THE WEATHER FOR SEPTEMBER, 1891.

In the north-central districts and at stations on the east New England coast the month was the warmest September on record. From the 16th to the 19th a warm wave extended over the central valleys and east of the Alleghany Mountains, attended by the highest temperature on record for the season from the lower Missouri valley to the upper lakes, and from the 21st to the 25th the highest temperature on record for the third decade of September was noted in the upper Mississippi and Ohio valleys and the Lake region.

The coolest weather of the month occurred from the Lake region and lower Missouri valley to the Gulf and middle Atlantic and New England coasts during the first decade, and along the Pacific coast, over the Rocky Mountain and plateau regions, from the Missouri Valley over the west part of the Lake region, on the south Atlantic coast, and in Florida during the third decade of the month. Light and heavy frosts occurred in the northern tier of states; as far south as the Ohio and lower Missouri valleys, Colorado, and Utah; and in Oregon and northern California.

PRECIPITATION.

Less than the usual amount of precipitation was reported east of the 100th meridian, except over the Florida Peninsula and in the Canadian Maritime Provinces, where the rainfall was in excess of the average. The precipitation was also generally in excess in the Rocky Mountain and plateau regions. Over the middle-eastern part of the plateau region, on the adjoining eastern slope of the Rocky Mountains, and on the extreme north Pacific coast the monthly precipitation was the greatest, and at stations in the central valleys it was the least ever reported for September. The first light snow of the season was noted at elevated stations in the middle and northern Rocky Mountain and plateau regions during the third decade of the month, and in the mountains of Colorado a total depth of five to ten inches was reported.

STORMS.

Compared with the summer months a marked decrease in the number of local storms is noted for September. No tornadoes were reported, and the more severe storms were general in character, and, as a rule, unattended by serious loss.

AURORAS.

Numerous and widely-observed auroral displays were reported. On a number of dates they were noted generally in the more northern states east of the Rocky Mountains, and on the 11th from the Atlantic to the Pacific coasts and southward in the central valleys to the 40th parallel.

DROUGHT.

In parts of New England, the middle Atlantic and east Gulf states, in the states of the middle and lower Mississippi, Ohio, and lower Missouri valleys, and in portions of the upper lake region the month was very dry, and in areas in the Southern States crops were injured by drought. Navigation on the middle and lower Mississippi river and tributaries was rendered difficult by low water.

ATMOSPHERIC PRESSURE (expressed in inches and hundredths).

The distribution of mean atmospheric pressure for September, 1891, as determined from observations taken daily at 8 a. m. and 8 p. m. (75th meridian time), is shown on Chart II by isobars.

The mean pressure was highest along the Atlantic coast between the 35th and 42d parallels and thence westward over the Ohio Valley and Tennessee, where it was above 30.15, whence it decreased northward to 30.00 over the lower Saint Lawrence valley, northwestward to less than 29.90 over the British Northwest Territory, and westward to less than 29.85 over the west part of the southern plateau region. From the southern plateau region there was an increase in press-

ure to the north Pacific coast, where the mean values were above 30.00.

A comparison of the pressure chart for September, 1891, with that of the preceding month shows a general increase in mean pressure, except in the north-central districts, on the north and south Pacific coasts, over the west part of the southern plateau, in the lower Rio Grande valley, and over southern Florida. The greatest increase in mean pressure was noted from the upper Ohio valley and the lower lake region to the middle Atlantic coast, where it exceeded .15, and the most marked decrease occurred in the British Possessions north of Montana, and on the extreme north Pacific coast, where it was more than .05.

The mean pressure was above the normal east of the middle and southeast slopes of the Rocky Mountains and the Red River of the North Valley, and on the middle and south Pacific coasts. The mean values were generally below the normal over the plateau region, on the north Pacific coast, and on the northeastern slope of the Rocky Mountains. The greatest departure above the normal pressure occurred from the middle-eastern slope of the Rocky Mountains to the Atlantic coast from Nova Scotia to southern Florida, where it was more than .05, and the most marked departure below the normal was noted over British Columbia and Vancouver Island, where it exceeded .05.

HIGH AND LOW AREAS.

The tracks of areas of high and low pressure for September, 1891, are plotted on Charts IV and I, respectively, and some of the more prominent characteristics of the areas are shown in the table at the end of this chapter.

HIGH AREAS.

Six well-defined high areas appeared, the average number traced for September during the last 18 years being 6.5. Of the high areas traced for the current month three advanced from the British Northwest Territory, one appeared north of the Lake region, and two were first located on the north Pacific coast. Except in the case of number I the high areas of the first two decades of the month moved slowly southeastward from the British Possessions and passed off the New New England or middle Atlantic coasts, and those of the last decade advanced from the north Pacific coast to the lower Missouri valley, and moved thence east-northeastward to the upper Saint Lawrence valley and New England, their rate of advance, 40 miles per hour, being much greater than the average velocity of high areas for September. The following is a description of the high areas traced:

I.—The month opened with high pressure over the eastern and extreme northwestern parts of the country and low pressure from the Red River of the North Valley to the southern plateau region. The morning of the 1st high area I was central over Alberta, whence it moved to Kansas by the 3d, passed over the upper lake region during the 4th, and reached Nova Scotia the night of the 5th. On the 1st and 2d a cool wave overspread the middle and lower Missouri and upper Mississippi valleys, and on the 1st the greatest abnormal temperature fall in 12 hours noted for the month, 28°, occurred at Rapid City, S. Dak. On the 3d heavy and light frosts occurred from Wyoming to Wisconsin. The lowest temperature of the month was noted at stations on the eastern slope of the Rocky Mountains, and the first light frost of the season was reported at Lander, Wyo., and Duluth, Minn. On the 4th frost was reported in the upper Mississippi and lower Missouri valleys, and the west part of the Lake region. The lowest temperature of the month occurred at stations from Minnesota to Texas, and the first light frost of the season was reported at Platte River, Mo., and Springfield, Ill. On the 5th and 6th the lowest temperature of the month was noted in the middle Gulf states, attending a short-lived high area which appeared in the rear of low area I.

II.—Appeared north of Montana the morning of the 5th, remained nearly stationary over the Red River of the North Valley during the 6th and 7th, and passing thence southeastward was central off the new Jersey coast the night of the 10th. On the 8th the first light frost of the season was reported at Detroit and Lansing, Mich., and the lowest temperature of the month occurred at Toledo, Ohio. On the 9th heavy frost was reported in Oxford county, Maine; heavy frost, and ice one-half inch thick, were noted at Blue Knob, Pa.; at Baltimore, Md., the mean temperature was the lowest ever noted for September; the first light frost of the season occurred at Manchester, N. H. On the 10th heavy frost was reported in central and northeastern Pennsylvania, and on low ground in Carroll county, Maryland. On the 10th and 11th heavy frost occurred in northern and western Connecticut. During the 9th and 10th the lowest temperature of the month was noted from the upper Ohio valley to the Atlantic coast north of the 40th parallel.

III.—Appeared north of Montana on the 12th, passed thence southeastward to the region between the Ohio River and the south Atlantic coast, where it remained nearly stationary from the evening of the 14th to the morning of the 17th, and moving thence eastward was central off the North Carolina coast the night of the 17th. This area had the slowest advance movement, 20 miles per hour, noted in connection with the high areas of the month, and its passage was attended on the 15th by the lowest temperature of the month in east Tennessee and the west parts of the Carolinas.

IV.—Was central north of the Lake region on the 19th, whence it moved southeastward and passed off the south New England coast during the 20th, its passage being unattended by noteworthy features.

V.—The presence of this high area off the north Pacific coast was indicated by reports of the 22d, and the evening of the 23d it was central on the Washington coast, whence it passed to the lower Missouri valley by the 25th, thence over the Lake region by the morning of the 26th, and to the New England coast by the evening of that date, its average velocity across the continent being 40 miles per hour. The greatest abnormal rise in pressure in 12 hours noted for the month, .62 inch, occurred at Calgary, N. W. T., on the 23d, and at Dodge City, Kans., the abnormal temperature fall in 12 hours was 27° on the 24th. The first light frost of the season was reported at Albany, Oregon, on the 22d; at Baker City, Oregon, on the 23d; and at Salt Lake City, Utah, and Choteau, Mont., on the 24th. The first snow of the season was reported in Wyoming on the 24th. The first killing frost of the season was reported at Baker City, Oregon, on the 24th. The lowest temperature of the month was reported at stations in the middle plateau and in the middle Missouri valley on the 24th and 25th.

VI.—Appeared on the north Pacific coast on the 27th, whence it moved to the lower Missouri valley by the morning of the 29th, and to the upper Saint Lawrence by the evening of the 30th. This area, like number V, had an unusually rapid advance movement, its average velocity being 40 miles per hour, and the morning of the 30th the highest pressure reported for the month, 30.62, was noted at Rockliffe, Ontario. The first light frost of the season was reported at Portland, Oregon, on the 27th; at Kansas City, Mo., Leavenworth and Abilene, Kans., and Omaha, Nebr., on the 29th; and at Chicago, Ill., on the 30th. The first killing frost of the season was reported at Topeka, Kans., on the 29th, and at Farmington, Me., on the 30th. The lowest temperature of the month occurred on the Pacific coast north of the 40th parallel from the 27th to 30th, and from the middle and lower Missouri valleys over the upper lake region during the 29th and 30th.

LOW AREAS.

The usual course of September low areas over the eastern part of the country is north of the 40th parallel, and the only storms of marked strength which visit the southeastern districts are those of tropical origin. September storms of this class, averaging about one per year, generally move westward from the vicinity of the Windward Islands and recurve over the Gulf of Mexico.

Twelve low areas appeared during the current month, the average number traced for September during the last 18 years being 10. The tracks of 5 of these low areas were traceable to the Pacific coast north of the 45th parallel; 3 were first located in the British Northwest Territory; 2 over the plateau region; one in the Red River of the North Valley; and one over the south Atlantic states. The storms generally pursued an easterly course over the north part of the Lake region and the Saint Lawrence Valley, and but one low area, number III, was plotted south of the 40th parallel. The average rate of advance of the low areas, 27 miles per hour, was about the same as the average velocity noted for September of previous years. The following is a description of the low areas whose tracks appear on Chart I:

I.—Moved from the Red River of the North Valley to the region north of Lake Superior during the 1st, with wind velocities of 30 to 60 miles per hour over eastern Montana and the Dakotas, and rain from the middle and northeast slopes of the Rocky Mountains to the Red River of the North Valley. During the 2d and 3d the advance of this storm was retarded by high pressure to the east and southeast, and it moved slowly eastward with diminished energy after the 2d, attended by fresh gales over the Lake region, rain from the Lake region over the central valleys and middle and south Atlantic states, and thunderstorms from the Lake region to Arkansas and Tennessee. On the 4th the storm-center passed to the Gulf of Saint Lawrence.

II.—Advanced from the Pacific Ocean and the evening of the 2d was central over Alberta. During the 3d high area I occupied the central valleys and this storm moved slowly eastward north of Montana. During the 4th the storm remained nearly stationary over Manitoba, high area I occupied the Lake region, wind velocities of 30 to 40 miles per hour were reported over the Dakotas, western Iowa, and western Minnesota, and areas of light rain were noted over the middle plateau region and on the northeast slope of the Rocky Mountains. On the 5th the storm-center passed southeast over the Lake region and apparently united with low area III which advanced from the southward, and light rain fell in areas in the upper Mississippi valley. From the 1st to 3d the highest temperatures of the month occurred from the north Pacific coast over the middle plateau.

III.—Appeared over western Virginia on the 4th and moved thence to the lower lake region by the 5th, attended by heavy rain and thunder storms in the middle and south Atlantic states, and rain in the Ohio Valley and lower lake region. During the 6th and 7th the storm-center moved along the Saint Lawrence Valley to the Gulf of Saint Lawrence, with heavy rain in the Atlantic coast states north of the Carolinas, and destructive local storms from the Ohio Valley over the middle Atlantic states and New England. The barometric depression attending this storm was slight, and it was characterized chiefly by heavy rainfall.

IV.—Appeared central over Alberta on the 8th and 9th, with pressure about 29.50 on the latter-named date, and wind velocities of 30 to 40 miles per hour in the middle Missouri valley. By the evening of the 10th the storm had moved to North Dakota, with rain areas from the west part of the upper lake region to the middle Missouri valley, wind velocities exceeding 40 miles per hour in the Dakotas, and heavy thunder and hail storms in Utah. Deflected northeastward by high area II, which occupied the east-central part of the country, the storm was central over eastern Manitoba the evening of the 11th, on which date the rain area extended to eastern Kansas. From this position the storm moved eastward with diminished energy and disappeared over the Gulf of Saint Lawrence during the 13th, with rain and thunder storms from the upper Mississippi valley over the Lake region, New England, and the Canadian Maritime Provinces, and fresh gales over the Great Lakes.

V.—Apparently advanced from the north Pacific coast and the morning of the 13th was central over eastern Oregon, with rain on the middle and north Pacific coasts. Moving rapidly eastward the storm reached the Dakotas the morning of the 14th, and the evening of that date was central over the extreme upper Mississippi valley, its passage being attended on the 13th by winds reaching 40 miles per hour in the region north of Montana, and on the 14th by wind velocities of 30 to 40 miles per hour from the middle Missouri valley to Kansas and Missouri, rain from Manitoba to the upper lake region, and severe local storms in Michigan, Wisconsin, and Minnesota. During the 15th the storm-center moved over the Lake region and disappeared over the Canadian Maritime Provinces, with wind velocities of 30 to 40 miles per hour over the Great Lakes, and severe local storms in northern Pennsylvania. On this date the rain area extended eastward from the Lake region over New England. This storm had the most rapid advance movement, 35 miles per hour, noted in connection with the low areas of the month.

VI.—Appeared north of Montana the evening of the 14th, with central pressure about 29.50, and passed thence to southwestern Manitoba by the evening of the 15th, with wind velocities of 30 to 40 miles per hour in the middle and upper Missouri valleys. By the morning of the 16th the center of disturbance had shifted its position to South Dakota, where it united with low area VI*a*, which had advanced from the westward. On this date wind velocities of 30 to 40 miles per hour were reported in the middle Missouri valley and thence over the upper lakes, rain fell in the north part of the upper lake region, and heavy thunderstorms occurred in upper Michigan. Deflected northeastward by high area III, which occupied the eastern part of the country, this storm was central over eastern Manitoba the morning of the 17th, with pressure below 29.50, whence it moved north of Lake Superior by the evening of that date, with wind velocities of 30 to 40 miles per hour from the middle Missouri valley over the upper lakes, and rain and heavy thunderstorms in North Dakota. Moving rapidly eastward the storm disappeared over the Gulf of Saint Lawrence during the the 18th, its passage being attended by violent thunderstorms from the Lake region over north New England. On the 15th and 16th the highest temperature of the month was noted at stations on the middle and northeast slopes of the Rocky Mountains, and in the middle Missouri valley.

VI*a*.—First appeared over western Nevada the morning of the 15th and moved to northeast Nevada by the evening of that date, with rain on the middle Pacific coast, and heavy wind, rain, and thunder storms, and the first snow of the season in the Sierra Nevada Mountains in east-central California. Passing thence to South Dakota this storm united with low area VI the morning of the 16th.

VII.—Apparently advanced from the north Pacific Ocean and the evening of the 17th was central over Alberta, with pressure falling to 29.40, rain, and heavy gales on the north Pacific coast. During the 18th and 19th the storm moved slowly eastward to Manitoba, with wind velocities of 30 to 50 miles per hour, and rain in the Missouri and Red River of the North valleys on the 18th, and on the 19th by severe wind and thunder storms in the Dakotas and Minnesota. During the 20th the center of disturbance moved over the north part of the Lake region, with diminished energy, and disappeared north of the Saint Lawrence Valley. From the 18th to 20th the highest temperature of the month occurred at stations from the Dakotas over the west part of the Lake region.

Attending the advance and passage of low areas VI and VII exceptionally warm weather prevailed in the north-central districts. In the Dakotas, Minnesota, Wisconsin, Michigan, northern Illinois, and northeastern Iowa the 16th and 17th were the warmest days on record for the season, and the maximum temperature was the highest ever reported for the second decade of September. During the 18th the warm wave extended over the central valleys and the Lake region.

VIII.—Apparently advanced from the north Pacific Ocean and was central north of Montana the evening of the 22d, with

pressure below 29.50, rain on the north Pacific coast and over the middle plateau region, and wind velocities of 30 to 50 miles per hour in the Dakotas. Following a course similar to that pursued by number VII, this disturbance disappeared north of the Saint Lawrence Valley the night of the 24th. On the 23d wind velocities of 30 to 40 miles per hour and rain were reported from the British Northwest Territory to Kansas, and severe local storms occurred in Nebraska. During the 24th the storm diminished in strength and rain fell in areas from the Red River of the North Valley to New Mexico.

The period of high temperature noted in connection with low areas VI and VII continued. In upper Michigan the 23d was the warmest September day on record. In Minnesota, parts of Iowa, in lower Michigan and thence eastward to New England the weather was unusually warm, and from the 22d to 24th the highest temperature of the month was noted from the middle Mississippi valley and the east part of the Lake region to the east Gulf states.

IX.—Appeared central over northern Alberta on the 25th, and moved to Manitoba by the evening of the 26th, with central pressure below 29.50, and rain along the middle-eastern slope of the Rocky Mountains and in the middle Missouri valley. By the morning of the 27th the center of disturbance moved to the Lake Superior region, and during that date the center shifted its position to South Dakota, this course being apparently influenced in some degree by high pressure to the eastward attending high area V. On this date the rain extended over the central valleys, and a heavy windstorm was reported in the north-central counties of Minnesota. By the 28th the center had moved to the Lake Superior region, with rain in the central valleys and over the west part of the Lake region, high winds from the lower Missouri and middle Mississippi valleys to the Great Lakes, violent gales over the upper lakes, and local storms in the middle Mississippi valley. Moving eastward the storm-center disappeared over the Gulf of Saint Lawrence the night of the 29th. On this date the rain area extended to the Atlantic coast, and gales of exceptional severity prevailed over the Lake region.

X and X*a*.—Low area X advanced from the north Pacific Ocean and the evening of the 28th was central over Alberta, with rain and hard gales on the north Pacific coast. On this date the greatest abnormal fall in pressure in 12 hours noted for the month, .62, was reported at Calgary, N. W. T. During the 29th the storm-center moved slowly eastward north of Montana, with pressure below 29.40, the lowest pressure noted for the month, 29.32, being reported at Medicine Hat, N. W. T., in the morning. On this date the rain area extended over the northern plateau region, and wind velocities of 30 to 60 miles were reported in the middle and upper Missouri valleys. During the 30th this storm area was apparently deflected southward by high area VI, which occupied the east part of the Lake region, and appeared to unite with low area X*a*, which occupied the middle plateau region on the 29th. Low area X*a* developed great energy during its passage eastward, central pressure falling below 29.40 and wind velocities of 30 to 60 miles per hour from Utah to the middle Missouri valley being reported on the 29th and 30th, and the first snow of the season fell over Montana, Idaho, northern Nevada, northern Wyoming, east Oregon, and in the mountains of east-central California on the 30th. Attending the recurve of low area X on the 30th, the greatest abnormal rise in temperature in 12 hours noted for the month, 26°, was reported at Winnipeg, Man.

Tabulated statement showing principal characteristics of areas of high and low pressure.

Barometer.	First observed.			Last observed.		Duration.	Velocity per hour.	Maximum pressure change and maximum abnormal temperature change in twelve hours and maximum wind velocity.									
	Date.	Lat. N.	Long. W.	Lat. N.	Long. W.			Station.	Rise.	Date.	Station.	Fall.	Date.	Station.	Direction.	Miles per hour.	Date.
High areas.		°	°	°	°	*Days.*	*Miles.*		*Inch.*			°					
I	1	52	114	46	64	4.5	28	Calgary, N. W. T	.42	1	Rapid City, S. Dak	28	1	Fort Sill, Okla. T	n.	32	2
II	5	52	109	40	72	5.5	21	Minnedosa, Man	.40	5	Moorhead, Minn	16	8	Kitty Hawk, N. C	e.	20	11
III	12	50	103	36	75	5.0	20	Medicine Hat, N. W. T	.36	12	San Antonio, Tex	18	14	Jupiter, Fla	ne.	36	17
IV	19	47	80	42	72	1.0	21	Port Arthur, Ont	.42	18	Rockliffe, Ont	17	19	Kitty Hawk, N. C	ne.	18	20
V	23	46	125	42	70	3.0	40	Calgary, N. W. T	.62	23	Dodge City, Kans	27	24	Fort Canby, Wash	nw.	16	22
VI	27	47	125	45	74	3.0	40	Father Point, Quebec	.44	30	Concordia, Kans	23	29	Abilene, Tex	n.	36	29
Mean						3.7	28		.44			21				26	
Low areas.									Fall.			Rise.					
I	1	47	98	49	69	3.0	22	La Crosse, Wis	.28	1	La Crosse, Wis	15	1	Custer Station, Mont	n.	60	1
II	2	51	116	49	90	2.5	30	Calgary, N. W. T	.56	2	Custer Station, Mont	24	3	Huron, S. Dak	se.	42	4
III	4	36	82	50	64	2.5	23	Rockliffe, Ont	.24	6	Kingston, Ont	11	6	Sandy Hook, N. J	e.	28	5
IV	9	51	115	50	67	3.5	30	Medicine Hat, N. W. T	.38	9	Bismarck, N. Dak	18	10	Huron, S. Dak	se.	44	10
V	13	45	119	43	77	2.5	35	Qu' Appelle, N. W. T	.52	13	La Crosse, Wis	21	14	Swift Current, N. W. T	se.	40	13
VI	14	50	111	50	69	3.5	32	Calgary, N. W. T	.38	14	Duluth, Minn	21	17	Huron, S. Dak	se.*	44	16
VI*a*	15	38	118	45	103	1.0	37	Winnemucca, Nev	.14	15	Winnemucca, Nev	14	15	Keeler, Cal	sw.	49	15
VII	17	52	128	47	82	3.5	25	Prince Albert, N. W. T	.34	18	Pierre, S. Dak	23	18	Moorhead, Minn	sw.	54	19
VIII	22	52	112	49	87	2.0	24	do	.38	22	Denver, Colo	20	23	Huron, S. Dak	s.†	50	22
IX	25	53	113	50	68	4.5	31	Medicine Hat, N. W. T	.40	25	Medicine Hat, N. W. T	24	25	Saint Louis, Mo	sw.‡	46	28
X	28	50	117	47	99	1.5	25	Calgary, N. W. T	.64	28	Winnipeg, Man	26	30	Fort Canby, Wash	se.	72	28
X*a*	29	41	113	41	103	1.0	21	Salt Lake City, Utah	.44	29	Pueblo, Colo	20	29	Sioux City, Iowa	s.	50	30
Mean						2.6	27		.39			20				48	

* Mount Washington, N. H., nw., 84, 18th. † Mount Washington, N. H., nw., 99, 25th. ‡ Mount Washington, N. H., nw., 89, 30th.

NORTH ATLANTIC STORMS FOR SEPTEMBER, 1891 (pressure in inches and millimeters; wind-force by Beaufort scale).

The paths of storms that appeared over the north Atlantic Ocean during September, 1891, are shown on Chart I. These paths have been determined from observations by shipmasters received through the co-operation of the Hydrographic Office, Navy Department, and the "New York Herald Weather Service."

Severe storms were encountered along the trans-Atlantic steamship routes; two storms of marked energy advanced from the sub-tropical region north of the West Indies; and cyclonic disturbances appeared over the Gulf of Mexico during the second and third decades of the month.

On the 1st a storm of great energy was central northwest of the British Isles, whence it moved slowly eastward over the North Sea by the 3d, with violent gales and heavy rain in Great Britain and Ireland. On the 6th a storm appeared central northeast of the Bahamas, whence it moved rapidly northward to the east New England coast the evening of the 7th, and passed thence northeastward over Newfoundland during the early part of the 8th. During the 7th this storm was

attended by gales of hurricane force at sea, and at night by destructive wind and heavy rain over Nova Scotia. From the 6th to 12th low pressure continued over mid-ocean. On the 11th a cyclonic disturbance was central over the east part of the Gulf of Mexico, with heavy rain and high wind on the east Gulf coast. By the morning of the 12th the storm was central near extreme western Florida, after which it apparently dissipated. On the 14th a storm which apparently developed off the south Atlantic coast was central about midway between Bermuda and the North Carolina coast, whence it passed rapidly to Newfoundland by the 15th, and thence northwest of the British Isles by the 18th, with fresh to strong gales along the steamship routes.

On the 18th a cyclonic disturbance was indicated south of western Cuba. On the 19th the cyclone center was apparently located west-southwest of Havana, and on the 20th it was central over the middle Gulf, with high winds and heavy rain on the central and west Gulf coasts, and thunderstorms over the east Gulf. On the 18th a cyclone appeared northeast of the Windward Islands, whence it moved slowly northwestward and passed east of Bermuda about midnight of the 21st. Recurving eastward, the storm-center reached the 40th parallel in about longitude W. 45° on the 25th, where it apparently recurved northward and united with an area of low pressure which was central over Newfoundland on the 26th. The influence of this storm was felt at Bermuda from the 19th to 23d. On the 19th the wind at that place was northeast, force 2 to 4, with barometer falling to 29.88 (759) at 9 p. m. On the 20th the wind shifted from northeast to north-northeast, force 5, at noon, with pressure 29.71 (755) and to north at midnight, force 5 to 6, pressure 29.40 (747). On the 21st the wind shifted from north to north-northwest at 8 a. m., force 5 to 6, and pressure 29.21 (742), and to northwest at 2 p. m., force 5 to 6, pressure 29.15 (740). The barometer continued to fall until midnight, when it read 28.95 (735), with wind northwest, force 6 to 7, after which it rose to 29.55 (751) by midnight of the 22d, and to 29.90 (759) by 9 p. m. of the 23d, with wind shifting from northwest to north-northwest and diminishing in force. On the 21st a Spanish brig loaded with mahogany lumber was wrecked on the southwest shore of the island; the crew was saved. Trees were blown down; but little damage was caused to buildings.

During the last decade of the month the pressure continued low over mid-ocean, with periods of heavy gales, and on the 27th the pressure fell below 29.00 (737) in that region, and strong to whole gales continued until the close of the month. Heavy storms were reported in Great Britain on the 21st and 22d, and the pressure continued low over the British Isles from the 26th until the close of the month. On the 25th a disturbance was central over the west part of the Gulf of Mexico, with high winds along the west Gulf coast, and the evening of that date it was apparently central south of the mouth of the Rio Grande River.

OCEAN ICE IN SEPTEMBER.

The following table shows the southern and eastern limits of the region within which icebergs or field ice were reported for September during the last 9 years:

Southern limit.			Eastern limit.		
Month.	Lat. N.	Long. W.	Month.	Lat. N.	Long. W.
	° ′	° ′		° ′	° ′
September, 1883	48 25	47 10	September, 1883	49 01	44 33
September, 1884	46 06	53 21	September, 1884	47 39	49 14
September, 1885	45 40	48 22	September, 1885	48 40	46 27
September, 1886	46 40	53 00	September, 1886	48 00	48 40
September, 1887	45 37	40 50	September, 1887	45 37	40 50
September, 1888	Off Cape	Race	September, 1888	53 00	52 08
September, 1889	46 21	48 22	September, 1889	48 59	46 48
September, 1890*	45 30	48 00	September, 1890*	50 30	46 22
September, 1891	Straits of	Belle Isle	September, 1891	53 18	51 20
Mean	47 08	49 33	Mean	49 20	47 20

*On the 4th a large lump of ice 100 feet long and 6 feet above water was reported in N. 36° 49′, W. 42° 18′; this is the lowest latitude in which ice was ever reported in the north Atlantic Ocean.

The table shows that in September, 1891, ice was reported about 4° north and about 4° west of the average southern and eastern limits of Arctic ice as determined from reports of the last 8 years. The southernmost ice, an iceberg, was reported in the Straits of Belle Isle on the 28th, and the easternmost ice, 6 icebergs, was observed on the 20th, in the position given. The table also shows that the current month is the only September during the last 8 years in which ice was not reported south of the 50th parallel. The ice reported for the current month was confined to the region lying between the Straits of Belle Isle and the 51st meridian, where it was observed during the first and third decades of the month. The positions of icebergs reported for September, 1891, are shown on Chart I by ruled shading.

FOG IN SEPTEMBER.

The limits of fog-belts west of the 40th meridian, as reported by shipmasters, are shown on Chart I by dotted shading. In the vicinity of the Banks of Newfoundland fog was reported on 11 dates; between the 55th and 65th meridians on 4 dates; and west of the 65th meridian on 8 dates. Compared with the corresponding month of the last 3 years the dates of occurrence of fog east of the 55th meridian numbered 5 less than the average; between the 55th and 65th meridians 3 less than the average; and west of the 65th meridian 2 more than the average.

The fog reported along the trans-Atlantic steamship routes west of the 40th meridian, and at Weather Bureau stations along the New England and New Jersey coasts, generally attended the advance or passage of general storms.

TEMPERATURE OF THE AIR (expressed in degrees, Fahrenheit).

Many of the voluntary stations do not have standard thermometers or shelters.

The distribution of mean temperature over the United States and Canada for September, 1891, is exhibited on Chart II by dotted isotherms. In the table of miscellaneous meteorological data the monthly mean temperature and the departure from the normal are given for regular stations of the Weather Bureau. The figures opposite the names of the geographical districts in the columns for mean temperature and departure from the normal show, respectively, the average for the several districts. The normal for any district may be found by adding the departure to the current mean when the departure is below the normal and subtracting when above. The monthly mean temperature for regular stations of the Weather Bureau represents the mean of the maximum and minimum temperatures.

At stations in the Colorado Desert in the east part of San Diego county, Cal., the mean temperature was above 90; the mean values were above 80 in west Arizona and southeast California, along the lower Rio Grande river, and in southern Florida. The mean temperature was lowest at points along the North Saskatchewan River, British America, and at mountain stations in central Colorado, where it was below 50; the mean readings were below 55 at stations on the Central Pacific Railway crossing the summit of the Sierra Nevada Mountains in California, at Rocky Mountain stations in east Idaho, west Montana, and west Wyoming, in the British Northwest Territory, and in the lower Saint Lawrence valley.

DEPARTURES FROM NORMAL TEMPERATURE.

The mean temperature was generally above the normal, slight deficiencies being reported in Florida, along the coast of the

Gulf of Mexico, in the lower Colorado and Gila valleys, in northern California, and on the north Pacific coast. The most marked departure above the normal temperature was noted from the Missouri River over the upper lake region, where it was 5 to 8. The deficiencies noted did not exceed 1.

TEMPERATURE, JANUARY TO SEPTEMBER.

For the period January to September, 1891, inclusive, the mean temperature averaged about normal in the south Atlantic and east Gulf states, the lower Rio Grande, upper Mississippi, and Missouri valleys, the Ohio Valley and Tennessee, and on the north and middle Pacific coasts. In New England, the Lake region, the extreme northwest, and the northern plateau region there was an excess of 1 to 2, and at Key West, Fla., in the west Gulf states, along the eastern slope of the Rocky Mountains, and over the middle and southern plateau regions the deficiency was 1 to 2 for the period named.

PERIODS OF HIGH TEMPERATURE.

The warmest weather of the month occurred over the Rocky Mountain and plateau regions, and generally along the Pacific coast, during the first decade of the month; between the Mississippi River and the Rocky Mountains, along the middle Atlantic coast, and over the Florida Peninsula during the second decade; and from the Lake region to the middle coast of the Gulf of Mexico during the third decade of the month. On the 1st the highest maximum temperature on record for September was reported at Red Bluff and Keeler, Cal. The warm wave of the 16th to 19th was attended by the highest temperature on record for the season from the lower Missouri valley over the upper lake region, where the maximum temperature was above 90, and 1 to 4 higher than previously reported for the second decade of September. The warm wave which extended over the Lake region and the upper Mississippi and Ohio valleys from the 21st to 25th was attended by the highest temperature noted in those regions for the third decade of September, the maximum temperature ranging 6 to 7 above the highest temperature previously noted for the season. This warm wave extended over New England during the 25th and 26th.

PERIODS OF LOW TEMPERATURE.

The coolest weather of the month occurred from the Lake region and the lower Missouri valley to the Gulf of Mexico, and in New England and the middle Atlantic states during the first decade of the month; in eastern Tennessee and the interior of the south Atlantic states during the second decade; and along the Pacific coast, over the Rocky Mountain and plateau regions, from the Missouri Valley over the west part of the Lake region, along the immediate south Atlantic coast, and in the Florida Peninsula during the third decade of the month. The cool wave of the first decade was attended by frost in Iowa, the Dakotas, Minnesota, Wisconsin, Michigan, Illinois, Missouri, Wyoming, parts of Pennsylvania and Maryland, and generally in New England. The 9th was reported the coolest September day on record at Baltimore, Md. The cool wave of the third decade was attended by frost in Oregon, northern California, Utah, Montana, the Dakotas, Nebraska, Kansas, Iowa, Missouri, and Illinois.

YEARS OF HIGHEST MEAN TEMPERATURE IN SEPTEMBER.

Over the north-central part of the country from northeast Colorado and east Wyoming and Montana to the west part of the Lake region, at stations on the New England coast, and in the interior of North Carolina and New Mexico the current month was the warmest September on record, and in the Red River of the North and middle Missouri valleys the mean temperature was 3 to 5 higher than previously noted for September. In 1888 the month was the warmest September on record over the Rocky Mountain and plateau regions and along the Pacific coast; in 1884 from the middle-eastern slope of the Rocky Mountains to the Gulf of Mexico; and in 1881 generally east of the Mississippi River.

YEARS OF LOWEST MEAN TEMPERATURE IN SEPTEMBER.

In Texas and Indian Territory the lowest mean temperature on record for September was noted in 1889; at stations along the New England and middle Atlantic coasts in 1888; generally over the Rocky Mountain and plateau regions and on the middle and north Pacific coasts in 1884; over the east part of the Lake region and in the lower Missouri valley in 1883; in the middle and east Gulf states in 1880; in the middle and lower Ohio and middle Missouri valleys and over the east part of the middle plateau region in 1879; in the upper Mississippi valley and the north part of the upper lake region in 1873; and along the Atlantic coast from New Jersey to Georgia in 1871.

In 1888, when the mean temperature was the highest on record west of the Rocky Mountains, it was the lowest ever reported for September along the New England and middle Atlantic coasts, and in 1884, when it was the highest ever noted from the middle-eastern slope of the Rocky Mountains to the Gulf of Mexico, it was the lowest on record for the month generally west of the Rocky Mountains.

DEVIATIONS FROM NORMAL TEMPERATURE.

The following table shows for certain stations, as reported by voluntary observers, (1) the normal temperature for September for a series of years; (2) the length of record during which the observations have been taken, and from which the normal has been computed; (3) the mean temperature for September 1891; (4) the departure of the current month from the normal; (5) and the extreme monthly mean for September during the period of observation and the years of occurrence:

State and station.	County.	(1) Normal for the month of Sept.	(2) Length of record.	(3) Mean for Sept., 1891.	(4) Departure from normal.	(5) Extreme monthly mean for September.			
						Highest.	Year.	Lowest.	Year.
Arkansas.		°	Years	°	°	°		°	
Lead Hill	Boone	70.5	10	75.6	+ 5.1	76.4	1884	67.5	1883
California.									
Sacramento	Sacramento	68.6	37	62.5	— 6.1	76.0	1853	61.9	1884
Connecticut.									
Middletown	Middlesex	60.7	23	64.8	+ 4.1	64.8	1891	52.4	1871
Florida.									
Merritts Island	Brevard	79.7	9	80.0	+ 0.3	82.5	1882	78.0	1890
Georgia.									
Forsyth	Monroe	76.4	17	77.2	+ 0.8	82.2	1884	72.8	1888
Illinois.									
Peoria	Peoria	66.8	35	70.4	+ 3.6	73.4	1865	60.2	1866
Riley	McHenry	60.8	25	68.4	+ 7.8	68.4	1865, '91	56.4	1888
Indiana.									
Vevay	Switzerland	68.3	25	68.6	+ 0.3	76.3	1881	63.0	1869
Iowa.									
Cresco	Howard	58.5	18	64.6	+ 6.1	64.6	1891	54.3	1873
Monticello	Jones	61.3	37	65.5	+ 4.2	73.1	1865	51.0	1856
Logan	Harrison	64.9	17	69.8	+ 4.9	70.2	1886	61.3	1876
Kansas.									
Lawrence	Douglas	66.8	28	.....	.....	71.2	1886	61.8	1868
Wellington	Sumner	69.0	12	.....	.....	74.5	1884	63.8	1883
Louisiana.									
Grand Coteau	Saint Landry	77.4	8	77.4	0.0	81.6	1884	74.7	1890
Maine.									
Orono	Penobscot	56.8	21	60.8	+ 4.0	60.8	1891	52.4	1873
Maryland.									
Cumberland	Allegany	62.1	32	67.1	+ 5.0	70.0	1881	55.7	1863
Massachusetts.									
Amherst	Hampshire	60.2	55	63.6	+ 3.4	67.4	1881	50.9	1858
Newburyport	Essex	60.5	13	64.1	+ 3.6	64.4	1884	57.0	1888
Somerset	Bristol	64.5	19	68.7	+ 4.2	69.2	1881	61.6	1885
Michigan.									
Kalamazoo	Kalamazoo	61.8	15	67.8	+ 6.0	69.0	1881	55.2	1879
Thornville	Lapeer	61.8	14	65.3	+ 3.5	71.0	1881	57.8	1879
Minnesota.									
Minneapolis	Hennepin	58.1	26	65.8	+ 7.7	67.7	1865	49.9	1868
Montana.									
Fort Custer	Custer	58.0	12	63.2	+ 5.2	63.2	1891	54.0	1884
New Hampshire.									
Hanover	Grafton	56.9	35	61.0	+ 4.1	62.9	1881	50.3	1848
New Jersey.									
Moorestown	Burlington	65.2	28	67.9	+ 2.7	73.6	1881	60.6	1871
South Orange	Essex	63.5	21	65.6	+ 2.1	71.8	1881	53.0	1871
New York.									
Cooperstown	Otsego	55.4	37	61.6	+ 6.2	66.7	1881	53.3	1860, '63
Palermo	Oswego	58.9	31	62.7	+ 3.8	65.1	1881	54.5	1883
North Carolina.									
Lenoir	Caldwell	65.2	19	67.9	+ 2.7	71.1	1884	55.2	1878
Ohio.									
N'th Lewisburgh	Champaign	64.3	59	69.0	+ 4.7	73.0	1881	55.0	1835
Wauseon	Fulton	62.8	21	67.6	+ 4.8	71.1	1881	57.2	1883
Oregon.									
Albany	Linn	60.9	13	58.1	— 2.8	64.7	1888	53.3	1884
Eola	Polk	59.6	21	57.4	— 2.2	65.3	1876	51.2	1881

Deviations from normal temperature—Continued.

State and station.	County.	(1) Normal for the month of Sept.	(2) Length of record.	(3) Mean for Sept., 1891.	(4) Departure from normal.	(5) Extreme monthly mean for September.			
						Highest.	Year.	Lowest.	Year.
Pennsylvania.		°	*Years*	°	°	°		°	
Dyberry	Wayne	58.0	24	60.6	+ 2.6	66.9	1881	52.5	1871
Grampian Hills	Clearfield	60.4	27	64.4	+ 4.0	72.0	1881	54.2	1871
Wellsborough	Tioga	58.9	12	59.0	+ 0.1	73.8	1881	52.3	1883
South Carolina.									
Statesburgh	Sumter	72.5	10	72.0	− 0.5	77.9	1881	69.9	1888
Tennessee.									
Austin	Wilson	71.9	20	71.5	− 0.4	78.2	1881	67.6	1875
Texas.									
New Ulm	Austin	77.3	19	77.6	+ 0.3	81.0	1872	74.6	1889
Vermont.									
Strafford	Orange	59.7	18	63.1	+ 3.4	64.4	1879	56.2	1876
Virginia.									
Birdsnest	Northampt'n	70.9	22	71.9	+ 1.0	79.1	1881	61.2	1877
Washington.									
Fort Townsend	Jefferson	57.3	16	55.3	− 2.0	63.5	1874	53.9	1884
Wisconsin.									
Madison	Dane	60.8	14	67.0	+ 6.2	67.0	1891	57.5	1890

MAXIMUM TEMPERATURE.

The maximum temperature was 1 above the highest temperature previously reported for September at Red Bluff and Keeler, Cal., on the 1st, and at La Crosse, Wis., on the 18th, and equaled the highest temperature on record at Duluth, Minn., on the 17th, at Huron, S. Dak., on the 18th, at Grand Haven, Mich., on the 19th, and at Dubuque, Iowa, on the 21st.

The maximum values were above 110 in the lower Colorado and middle and lower Gila valleys, and a reading of 120 was reported at Maricopa, Ariz.; in the central valleys of California, at stations in the west parts of the middle and southern plateau regions, in south-central Oregon, central lower Michigan, south Texas, south New Mexico, and at points in the central valleys east of the 87th meridian temperature above 100 was reported. The lowest maximum temperature was noted in extreme northwest Washington and along the north California coast, where it was 70 or below, and the maximum readings were below 80 in east New England, on the extreme southeast New England coast, and along the immediate Pacific coast north of the 40th parallel.

MINIMUM TEMPERATURE.

At Keeler, Cal., the minimum temperature on the 30th, 43, was 7 lower than previously reported at that station in September.

Minimum temperature below 20 was reported in an area extending over east-central Nevada, and in the northeast part of southern Idaho, and minimum readings below 30 were noted in north New England, north-central lower Michigan, north-central Wisconsin, northwestern Minnesota, the east parts of the Dakotas, and generally over the middle and northern plateau regions, except in parts of Utah and western Colorado, and in the valley of the Columbia River. The highest minimum temperature reported, 70, was noted at Key West, Fla., and the minimum readings were above 60 on the extreme eastern North Carolina coast, along the Atlantic coast south of North Carolina, and along the immediate Gulf coast.

LIMITS OF FREEZING WEATHER.

The southern and western limits of freezing weather are shown on Chart V. The southern limit is indicated by a line traced over north New England, by lines inclosing areas in north-central lower Michigan and north-central Wisconsin within which the temperature fell below 32, and by a line traced southward over western Minnesota to northern Iowa, thence westward to central Nebraska, thence northward east of the Missouri River to extreme northeast Montana, thence southward to north-central New Mexico, thence to central Arizona, and thence north of west over southern Nevada to east-central California, and the western limit is shown by this line continued northward over eastern California and central Oregon and Washington to British Columbia. In areas in the plateau region north of this line the minimum temperature was above 32, notably from northern Utah to west-central Colorado, and in the valley of the Columbia River in eastern Oregon and eastern Washington, where the minimum readings were 4 to 12 above the freezing point.

RANGES OF TEMPERATURE.

The greatest daily range of temperature is given in the table of miscellaneous data. The greatest monthly ranges were noted in the middle Missouri valley and from north-central Nevada over eastern Oregon, where they exceeded 60. From the Missouri Valley the monthly ranges decreased eastward to the extreme southeastern New England coast, where they were less than 30, southeastward to 17 at Hatteras, N. C., to 20 at Titusville and Key West, Fla., and on the middle Gulf coast, and from the middle part of the plateau region they decreased to the extreme northwest Washington and northern California coasts, where they were less than 30, and to the extreme southern California coast, where they were less than 40.

FROST.

The first light frost of the season was reported at Duluth, Minn., and Lander, Wyo., on the 3d; at Springfield, Ill., on the 4th; in southeast lower Michigan on the 8th; at points in New York and New England from the 8th to 11th; at stations in Utah on the 12th, 16th, and 24th; at Winnemucca, Nev., on the 17th; at Montrose, Colo., on the 19th; at points in northwestern Oregon on the 22d, 23d, and 27th; in eastern Oregon on the 23d; in western Missouri, eastern Kansas, and southwestern Iowa on the 29th; in the mountains of northeastern California on the 29th and 30th; and at Chicago, Ill., and Eureka, Cal., on the 30th.

The first heavy frost of the season was reported at Cheyenne, Wyo., on the 3d; at Baker City, Oregon, on the 24th; at Fort Assiniboine, Mont., and Fort McKinney, Wyo., on the 28th; in eastern Kansas and southeastern Nebraska on the 29th; and at Susanville, Cal., Helena, Mont., and Farmington, Me., on the 30th.

In the interior of the Atlantic coast states frost occurred as far south as south-central Pennsylvania on the 9th to 11th and 30th; in northern West Virginia on the 9th and 10th; on low ground in Carroll county, Md., on the 10th; in the Ohio Valley north of the Ohio River on the 9th and 30th; in Kansas and western Missouri on the 3d, 4th, 28th, and 29th; from the plateau region to south-central Arizona on the 25th and 26th; generally throughout the northern half of Nevada at intervals during the second and third decades of the month; in northern California on the 29th and 30th; and in western Oregon and western Washington at intervals during the third decade of the month.

In 1890 the first heavy frost of the season was reported in September at points in the northern tier of states from the Atlantic to the Pacific oceans; along the Atlantic coast to New Jersey; in the central valleys to Ohio, Missouri, and Kansas; in the plateau region to Colorado and Utah; and in Washington and Oregon. Records of previous years show that the first heavy frost of the season is not uncommon in September in New England, New York, northern Ohio, the upper lake region, and in the states of the middle and upper Missouri valleys.

PRECIPITATION (expressed in inches and hundredths).

The distribution of precipitation over the United States and Canada, for September, 1891, as determined from the reports of nearly 2,000 stations, is exhibited on Chart III. In the table of miscellaneous meteorological data the total precipitation and the departure from the normal are given for regular stations of the Weather Bureau. The figures opposite the names of the

geographical districts in the columns for precipitation and departure from the normal show, respectively, the averages for the several districts. The normal for any district may be found by adding the departure to the current mean when the precipitation is below the normal and subtracting when above.

The monthly precipitation was greatest over the east and south parts of the Florida Peninsula and on the extreme north Pacific coast, where it was more than 10.00. Precipitation to exceed 10.00 was also reported at Luling, La., and Brazoria, Tex. At stations in the Colorado Desert, California, no rainfall was reported, and less than 1.00 was noted over the greater part of California, generally in the plateau region and on the northeast slope of the Rocky Mountains, and in areas in the west part of the Lake region, the central valleys, Texas, and central Georgia.

DEPARTURES FROM NORMAL PRECIPITATION.

Less than the usual amount of rain fell east of the Rocky Mountains, except in Kansas, the Red River of the North valley, the Canadian Maritime Provinces, the Florida Peninsula, and in small areas in east Maryland and the middle Ohio valley, where there was an excess. The precipitation was also deficient over the south part of the southern plateau and in the Sacramento Valley. The greatest deficiency was noted at Pensacola, Fla., where it was more than 4.00, and it exceeded 2.00 from the upper lake region to the middle Mississippi valley and thence to west Florida, and in the middle Saint Lawrence valley. The greatest excess was reported in extreme northwest Washington, where it was more than 6.00, and it was more than 2.00 at Charlottetown, P. E. I., in west Nova Scotia, and over the Florida Peninsula.

Considered by districts the average percentage of the normal in districts where the precipitation was in excess was about as follows: southern and middle plateau regions, 190; middle-eastern slope, 186; north Pacific coast, 152; Key West, Fla., 141; and extreme northwest, 106. In districts where the precipitation was deficient the percentage of the normal was about as follows: Missouri Valley, 29; upper Mississippi valley, 30; upper lake region, 42; southeast slope, 45; east Gulf states, 47; Ohio Valley and Tennessee and lower lake region, 50; middle Atlantic states and northern plateau, 62; New England, 69; west Gulf states, 71; south Atlantic states, 77; and lower Rio Grande valley, 90.

PRECIPITATION, JANUARY TO SEPTEMBER.

For the period January to September, 1891, inclusive, the precipitation averaged about normal at Key West, Fla., in the Ohio Valley and Tennessee, and on the north Pacific coast. On the northeast slope of the Rocky Mountains the precipitation averaged about one-third greater, and in the middle Atlantic states, the extreme northwest, on the middle-eastern slope of the Rocky Mountains, and over the middle plateau region it was one-tenth to two-tenths greater than usual. In all other districts the precipitation was eight to nine-tenths of the usual amount for the period named.

YEARS OF GREATEST PRECIPITATION FOR SEPTEMBER.

The greatest precipitation ever reported for September was noted at Dodge City, Kans., Santa Fé, N. Mex., Cheyenne, Wyo., Montrose, Colo., and Tatoosh Island, Wash., in 1891; in South Carolina and east Georgia in 1890; from the middle Mississippi valley to south Michigan in 1886; in the valley of the lower Columbia river in 1884; from the middle Missouri valley to Lake Superior in 1881; and from west Pennsylvania to the Virginia and North Carolina coasts in 1876.

YEARS OF LEAST PRECIPITATION FOR SEPTEMBER.

The least precipitation ever reported for September was noted at Vicksburg, Miss.; Austin and Memphis, Tenn.; Lead Hill, Ark.; North Lewisburg, Ohio; Keokuk, Iowa; Chicago, Ill.; Milwaukee and Madison, Wis.; Leavenworth, Kans.; and Valentine, Nebr., in 1891; on the north Pacific coast in 1890; over the northern plateau region and from east Texas to the middle Missouri valley in 1888; in the Red River of the North Valley and on the North Carolina coast in 1887; along the New England and middle Atlantic coasts in 1884; on the east Gulf coast in 1883; from the middle Missouri valley to west Lake Superior in 1882; and in the lower lake region in 1871 and 1877. In the last 20 years there have been 8 years without rainfall in September at San Diego, Cal.; 5 years at Red Bluff, Sacramento, and Los Angeles, Cal.; 4 years at Winnemucca, Nev., and San Francisco, Cal.; 3 years at Yuma, Ariz.; and 2 years at Cheyenne, Wyo.

In 1891, when the monthly precipitation was the greatest on record for September on the extreme north Pacific coast and at stations in the east-central plateau, it was the least noted for the month at points in the central valleys. It was greatest on the south Atlantic coast and least on the north Pacific coast in 1890, and greatest in the lower valley of the Columbia River and least along the New England and middle Atlantic coasts in 1884.

DEVIATIONS FROM AVERAGE PRECIPITATION.

The following table shows for certain stations, as reported by voluntary observers, (1) the average precipitation for September for a series of years; (2) the length of record during which the observations have been taken and from which the average has been computed; (3) the total precipitation for September, 1891; (4) the departure of the current month from the average; (5) and the extremes for September during the period of observation and the years of occurrence:

State and station.	County.	(1) Average for the month of Sept.	(2) Length of record.	(3) Total for Sept., 1891.	(4) Departure from average.	(5) Extremes for Sept.			
						Greatest.		Least.	
						Am't.	Year.	Am't.	Year.
Arkansas.		*Inches*	*Years*	*Inches*	*Inches.*	*Inches.*		*Inches*	
Lead Hill	Boone	4.93	10	0.33	−4.60	12.08	1890	0.33	1891
California.									
Sacramento	Sacramento	0.15	42	0.07	−0.08	1.42	1890	0.00	*
Connecticut.									
Middletown	Middlesex	3.46	33	3.46	0.00	11.64	1882	0.49	1881
Florida.									
Merritts Island	Brevard	7.91	13	10.70	+2.79	23.78	1878	2.88	1883
Georgia.									
Forsyth	Monroe	3.60	17	1.35	−2.25	8.69	1888	0.10	1886
Illinois.									
Peoria	Peoria	3.47	35	2.00	−1.47	9.63	1875	0.60	1867
Riley	McHenry	3.61	40	0.87	−2.74	8.89	1872	0.21	1877
Indiana.									
Logansport	Cass	3.45	15	1.61	−1.84	6.66	1859	0.24	1882
Vevay	Switzerland	3.43	26	1.64	−1.79	15.25	1866	0.47	1871
Iowa.									
Cresco	Howard	4.11	18	0.99	−3.12	10.03	1881	0.82	1888
Monticello	Jones	4.04	36	0.64	−3.40	10.15	1881	0.00	1871
Logan	Harrison	3.44	25	1.74	−1.70	9.90	1870	0.20	1882
Kansas.									
Lawrence	Douglas	3.41	26	.....	.....	9.15	1884	0.23	1888
Wellington	Sumner	3.72	12	.....	.....	11.19	1881	1.10	1884
Louisiana.									
Grand Coteau	St. Landry	3.53	8	.....	.....	10.58	1885	0.37	1888
Maine.									
Orono	Penobscot	3.41	21	3.68	+0.27	6.97	1888	0.95	1887
Maryland.									
Cumberland	Allegany	2.96	20	2.46	−0.50	8.50	1882	0.40	1873
Massachusetts.									
Amherst	Hampshire	3.44	56	2.25	−1.19	11.85	1882	0.37	1865
Newburyport	Essex	3.20	12	1.66	−1.54	8.47	1888	0.87	1884
Somerset	Bristol	3.06	19	2.66	−0.40	7.27	1888	0.94	1884
Michigan.									
Kalamazoo	Kalamazoo	3.39	15	1.40	−1.99	6.28	1879	0.53	1882
Thornville	Lapeer	2.81	14	3.96	+1.15	5.25	1879	0.95	1882
Minnesota.									
Minneapolis	Hennepin	3.57	25	1.92	−1.65	11.45	1869	0.15	1882
Montana.									
Fort Custer	Custer	0.77	12	1.30	+0.53	1.72	1890	0.03	1879
New Hampshire.									
Hanover	Grafton	3.01	50	1.54	−1.47	7.03	1840	0.27	1884
New Jersey.									
Moorestown	Burlington	3.85	28	3.33	−0.52	11.71	1882	0.16	1884
South Orange	Essex	4.13	21	2.76	−1.37	14.45	1882	0.15	1884
New York.									
Cooperstown	Otsego	3.36	37	1.41	−1.95	7.24	1890	1.17	1871
Palermo	Oswego	3.31	37	1.66	−1.65	7.55	1890	1.04	1880
North Carolina.									
Lenoir	Caldwell	4.19	19	3.10	−1.09	8.50	1878	0.40	1871
Ohio.									
N. Lewisburgh	Champaign	3.44	19	0.70	−2.74	8.20	1890	0.70	1891
Wauseon	Fulton	2.34	19	0.86	−1.48	5.29	1879	0.55	1871
Oregon.									
Albany	Linn	1.74	13	2.19	+0.45	5.61	1884	0.05	1890
Eola	Polk	1.55	21	2.51	+0.96	6.57	1884	0.00	*
Pennsylvania.									
Dyberry	Wayne	2.86	22	2.37	−0.49	6.49	1888	1.04	1885
Grampian Hills	Clearfield	3.38	20	2.38	−1.00	6.36	1868	1.14	1885
Wellsborough	Tioga	3.55	12	2.30	−1.25	8.40	1880	1.75	1888

Deviations from average precipitation—Continued.

State and station.	County.	(1) Average for the month of Sept.	(2) Length of record.	(3) Total for Sept., 1891.	(4) Departure from average.	(5) Extremes for Sept.			
						Greatest.		Least.	
						Am't.	Year.	Am't.	Year.
South Carolina.		*Inches*	*Years*	*Inches*	*Inches.*	*Inches.*		*Inches*	
Statesburgh	Sumter	3.60	19	3.06	−0.54	6.67	1884	0.75	1887
Tennessee.									
Austin	Wilson	3.90	21	1.12	−2.78	10.20	1868	1.12	1891
Texas.									
New Ulm	Austin	5.45	19	2.54	−2.91	15.08	1874	0.90	1872
Vermont.									
Strafford	Orange	3.68	18	1.60	−2.08	6.30	1880	0.70	1884
Virginia.									
Birdsnest	Northampton	3.64	22	2.05	−1.59	9.25	1890	0.00	1884
Washington.									
Fort Townsend	Jefferson	1.24	16	1.78	+0.54	5.79	1874	0.15	1890
Wisconsin.									
Madison	Dane	3.31	21	0.38	−2.93	8.17	1881	0.38	1891

*Generally.

EXCESSIVE PRECIPITATION.

The following tables show, by states, the number of stations reporting monthly precipitation to equal or exceed 10.00; precipitation to equal or exceed 2.50 in 24 hours; and precipitation to equal or exceed 1.00 in 1 hour in September, 1891:

Monthly precipitation to equal or exceed 10.00.

State.	Number of stations.	State.	Number of stations.
Florida	9	Louisiana	1
Washington	2	Texas	1

Precipitation to equal or exceed 2.50 *in* 24 *hours.*

State.	Number of stations.	Dates.	State.	Number of stations.	Dates.
Florida	9	1-2, 5, 6, 9, 10, 10-11, 12, 19, 30.	Connecticut	2	6, 6-7.
			District of Columbia	2	6.
			Kansas	2	7-8, 24, 26.
Texas	7	22, 23, 24, 24-25, 25-26, 29-30, 30.	Maryland	2	5-6, 6.
			Ohio	2	5.
			Oklahoma Territory	2	8-9, 26-27.
Louisiana	6	11, 20, 20-21, 27-28.	Arkansas	1	28.
			Indiana	1	3.
Mississippi	3	10, 20.	Massachusetts	1	7.
New Jersey	3	5, 5-6.	South Carolina	1	4.
Washington	3	17, 18.	Virginia	1	5.
Alabama	2	12-13, 28.			

Precipitation to equal or exceed 1.00 *in* 1 *hour.*

State.	Number of stations.	Dates.	State.	Number of stations.	Dates.
Florida	10	2, 6, 11, 20, 22, 27, 29, 30.	Minnesota	1	19.
			New Hampshire	1	18?
			New York	1	16.
Louisiana	5	3, 14, 16, 20-21, 29.	Oklahoma Territory	1	8.
			Tennessee	1	3.
South Carolina	2	6.	Texas	1	30.
Alabama	1	28.	Virginia	1	5.
Connecticut	1	6.			

The following tables show the number of years for which monthly precipitation to equal or exceed 10.00 inches, daily precipitation to equal or exceed 2.50 inches, and hourly precipitation to equal or exceed 1.00 inch has been reported in the several states and territories for September during the last 22 years:

Excessive monthly precipitation.

State.	No. years noted.	State.	No. years noted.
Florida	19	Missouri	3
Texas	13	Wisconsin	3
North Carolina	10	Ohio	2
Georgia	8	Delaware	2
Iowa	8	Michigan	2
New Hampshire	6	New York	2
Alabama	6	Washington	2
Kansas	5	Arkansas	1
Louisiana	6	Connecticut	1
Mississippi	5	District of Columbia	1
Virginia	5	Illinois	1
Indiana	4	Indian Territory	1
Massachusetts	4	Kentucky	1
Nebraska	4	Maryland	1
New Jersey	4	Minnesota	1
Pennsylvania	4	Oregon	1
South Carolina	4	Vermont	1

Excessive daily precipitation (24 *hours*).

State.	No. years noted.	State.	No. years noted.
North Carolina	19	Kentucky	7
Texas	18	Minnesota	7
Florida	17	Nebraska	7
Georgia	15	New York	7
Mississippi	15	Indiana	7
South Carolina	15	Maryland	7
Kansas	13	Indian Territory	6
Virginia	13	Massachusetts	6
Illinois	12	New Hampshire	4
Iowa	12	District of Columbia	4
Tennessee	12	Oregon	3
Alabama	12	Vermont	3
Michigan	11	West Virginia	3
Missouri	11	Maine	2
Arkansas	11	Arizona	2
Ohio	11	Washington	2
Louisiana	10	California	1
Wisconsin	9	Colorado	1
Connecticut	9	Delaware	1
The Dakotas	8	Montana	1
Pennsylvania	8	New Mexico	1
New Jersey	8	Rhode Island	1

Excessive hourly precipitation.

State.	No. years noted.	State.	No. years noted.
Texas	15	Indian Territory	3
Florida	13	Virginia	3
Georgia	10	Arkansas	2
Nebraska	9	Indiana	2
North Carolina	7	Kentucky	2
Illinois	6	Missouri	2
Kansas	6	West Virginia	2
New York	6	Minnesota	2
Tennessee	6	New Hampshire	2
Louisiana	5	The Dakotas	1
South Carolina	5	District of Columbia	1
Iowa	4	Maine	1
Michigan	4	Massachusetts	1
Pennsylvania	4	New Jersey	1
Alabama	4	Vermont	1
Arizona	3	Wisconsin	1
Mississippi	3	Connecticut	1
Ohio	3		

The following tables give exceptionally heavy monthly, daily, and hourly precipitation reported for September during the last 22 years:

Monthly.

Station and state.	Am't.	Year.	Station and state.	Am't.	Year.
	Inches.	*Year.*		*Inches.*	*Year.*
Brownsville, Tex	30.57	1886	Merritta Island, Fla	23.78	1878
Saint Marys, Ga	27.41	1885	Mayport, Fla	23.24	1885
Elsworth, N.C	26.50	1881	Brunswick, Ga	22.08	1885
Galveston, Tex	26.01	1885	Homeland, Fla	21.15	1890
Paterson, N. J	25.98	1882	Jacksonville, Fla	21.12	1878
Biscayne, Fla	25.10	1878	Spartanburgh, S. C	20.44	1888
Saint Augustine, Fla	23.90	1871	Wilmington, N. C	20.10	1877

Daily (24 hours).

Station and state.	Amount.	Date.	Station and state.	Amount.	Date.
	Inches.			*Inches.*	
Paterson, N. J	17.90	21-22, 1882	Wytheville, Va	7.02	12, 1878
Elsworth, N. C	13.00	15-16, 1881	Mobile, Ala	7.00	18, 1877
Genoa, Nebr	10.60	1, 1887	Fort Hays, Kans	7.00	12, 1871
Mayport, Fla	9.52	21, 1885	Shreveport, La	7.00	17, 1875
Luling, La	9.32	20-21, 1891	Portsmouth, N. C	7.00	12, 1884
Merritts Island, Fla	9.09	9, 1878	Homeland, Fla	6.85	1, 1890
Brownsville, Tex	8.50	21, 1887	Milledgeville, Ga	6.50	28, 1890
Greenwood, S. C	8.35	10, 1888	South Canisteo, N. Y	6.48	10, 1890
Nashua, Iowa	8.22	25, 1880	Columbia, Tex	6.47	10-11, 1890
Key West, Fla	7.90	21-22, 1889	Hot Springs, Ark	6.45	22-23, 1890
College Station, Tex	7.84	4, 1889	Brasoria, Tex	6.03	24, 1891
Jesup, Ga	7.82	27, 1885	Minden, La	5.72	22, 1890
Sedan, Kans	7.52	10-11, 1889	Midland, Tex	5.50	29-30, 1891
South Fork, Ky	7.50	17-18, 1889	Charleston, S. C	5.42	24-25, 1890
South Orange, N. J	7.50	23, 1882	Wedgwood, N. Y	5.34	10, 1890
Mt. Washington, N. H	7.41	15, 1880	New Braunfels, Tex	5.27	8, 1890
Abbeville, S. C	7.40	10, 1888	Centreville, Mo	5.20	8-9, 1890
Wilmington, N. C	7.30	10, 1880	Brewer Mine, S. C	5.20	13-14, 1890

One hour and less.

Station and state.	Amount.	Time.	Date.
	Inches.	*h. m.*	
Demos, Ohio	2.00	0 05	5, 1890
Jacksonville, Fla	0.62	0 05	6, 1891
Key West, Fla	0.45	0 05	20, 1891
Jupiter, Fla	0.40	0 05	8, 1891
Galveston, Tex	0.38	0 05	16, 1891
New York, N. Y	0.35	0 05	17, 1890
Savannah, Ga	0.35	0 05	12, 1890
Do	0.35	0 05	24, 1890
Norfolk, Va	0.32	0 05	14, 1890
Jupiter, Fla	0.30	0 05	5, 1890
Washington, D. C	0.30	0 05	11, 1890
New York, N. Y	0.45	0 08	21, 1882
Kirkwood, S. C	1.50	0 10	14, 1890
Jacksonville, Fla	1.18	0 10	6, 1891
Pine Apple, Ala	1.10	0 10	5, 1890
Norfolk, Va	0.45	0 10	6, 1891
Alpena, Mich	1.05	0 11	10, 1884
Omaha, Nebr	1 00	0 13	28, 1881
Howe, Tex	3.00	0 20	10, 1889
Emilie, La	1.24	0 20	3, 1891
Fort Riley, Kans	1.07	0 20	15, 1870
Charleston, S. C	2.00	0 30	13, 1877
Cedar Keys, Fla	1.70	0 30	2, 1888
Rio Grande City, Tex	1.93	0 35	26, 1879
Monroe, La	4.12	0 45	22, 1890
Fort Davis, Tex	2.42	0 45	9, 1880
Fort Meade, Fla	3.50	1 00	6, 1891
Luling, La	9.32	4 10	20-21, 1891

Table of excessive precipitation, September, 1891.

State and station.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Alabama.	*Inches.*	*Inches.*		*Inches*	*h. m.*	
Daphne		2.98	12-13			
Fort Deposit		3.40	28			
Union Springs				1.80	1 30	28
Arkansas.						
Texarkana		3.05	28			
Connecticut.						
New Haven		2.65	6-7	1.35	1 00	6
Wallingford		2.37	6			
District of Columbia.						
Distributing Reservoir		2.83	6			
Receiving Reservoir		3.85	6			
Florida.						
Amelia		2.59	10			
De Land (1)		3.45	9			
Eustis		2.84	30	2.30	1 00	30
Fort Meade	16.00	3.50	6	3.50	1 00	6
Gainesville				1.00	0 30	22
Homeland	17.10	3.45	5	2.25	2 00	2
Do		2.70	12			
Jacksonville	10.83	3.19	6	2.20	1 00	6
Do		3.79	10-11	1.08	1 00	11
Jupiter	11.77			1.05	1 00	3
Do				1.05	0 40	27
Do				1.10	1 00	29
Key West	10.39			1.56	1 00	20
Merritts Island	10.70					
Micco	13.70	2.72	19			
Orange City		2.55	10			
Pasadena				2.18	1 25	27
Saint Francis Barracks	10.68			2.00	2 00	6
Titusville	11.75	4.00	1-2			

Table of excessive precipitation—Continued.

State and station.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Indiana.	*Inches.*	*Inches.*		*Inches*	*h. m.*	
Huntingburgh		3.50	3			
Kansas.						
Downs		3.30	7-8			
Ellis		3.00	24			
Do		3.00	20			
Louisiana.						
Cameron				1.36	1 00	29
Edgard		4.67	20			
Emilie		4.70	20	1.24	0 20	3
Lake Charles				2.30	1 00	10
Luling	11.17	9.32	20-21	9.32	4 10	20-21
North Louisiana Experiment Station		3.25	11			
Shreveport		4.01	27-28			
Sugar Experiment Station		4.10	20-21	1.20	0 30	14
Maryland.						
Baltimore		4.00	5-6			
Fort McHenry		2.70	6			
Massachusetts.						
Blue Hill		2.95	7			
Minnesota.						
Moorhead				1.10	1 00	19
Mississippi.						
Bay Saint Louis		3.20	20			
Logtown		2.60	20			
Rienzi		3.23	10			
New Jersey.						
Freehold		3.00	5			
Imlaystown		2.52	5			
Oceanic		2.55	5-6			
New York.						
Minnewaska				2.00	1 30	16
Ohio.						
Elyria		2.74	5			
Oberlin		2.75	5			
Oklahoma Territory.						
Buffalo		3.00	26-27			
Oklahoma City		4.52	8-9	2.64	0 42	8
South Carolina.						
Charleston				2.30	1 15	6
Columbia		4.09	4			
Saint Georges				1.30	1 00	6
Tennessee.						
Franklin				1.00	0 40	3
Texas.						
Big Spring		3.50	30	3.50	2 30	30
Brownsville		2.90	25-26			
Brazoria	11.49	2.53	22-23			
Do		6.03	24			
Galveston		2.75	24-25			
Midland		5.50	29-30			
Odessa		2.85	30			
Silver Falls		2.82	30			
Virginia.						
Stanardsville		2.53	5	2.53	2 30	5
Washington.						
Lapush		3.30	18			
Neah Bay	10.78	4.40	17			
Tatoosh Island	11.06	3.40	17			

Received too late for publication in August, 1891.

Arizona.						
Chiricahua Mountains		2.50	12	2.50	1 00	12
Do				2.00	2 00	29
North Carolina.						
Washington	11.93	2.71	30			

MAXIMUM RAINFALL IN ONE HOUR OR LESS.

The following table is a record of the heaviest rainfall during September, 1891, for periods of five and ten minutes and one hour, as reported by regular stations of the Weather Bureau furnished with self-registering gauges:

Station.	Maximum fall in—					
	5 min.	Date.	10 min.	Date.	1 hour.	Date.
	Inch.		*Inch.*		*Inch.*	
Atlanta, Ga	0.02	11	0.03	11	0.12	11
Bismarck, N. Dak	0.03	23	0.06	23	0.20	27
Boston, Mass	0.03	7	0.06	7	0.17	7
Buffalo, N. Y	0.10	29	0.15	29	0.27	29
Cincinnati, Ohio	0.05	29	0.10	29	0.25	29
Chicago, Ill						
Cleveland, Ohio	0.11	13	0.15	5	0.42	5
Denver, Colo	0.01	22	0.02	22	0.05	22
Detroit, Mich	0.08	29	0.12	29	0.22	29
Dodge City, Kans	0.15	26	0.20	12, 26	0.47	26
Duluth, Minn	0.20	14	0.30	14	0.45	28
Eastport, Me	0.05	7	0.07	7	0.32	7
Galveston, Tex	0.38	16	0.56	16	0.95	24

Maximum rainfall in one hour or less—Continued.

Station.	Maximum fall in—					
	5 min.	Date.	10 min.	Date.	1 hour.	Date.
	Inch.		Inch.		Inch.	
Indianapolis, Ind	0.10	28	0.12	28	0.26	28
Jacksonville, Fla	0.62	6	1.18	6	2.20	6
Jupiter, Fla	0.40	8	0.60	8, 19	1.10	29
Kansas City, Mo	0.02	8	0.03	8	0.08	8
Key West, Fla	0.45	20	0.65	20	1.56	20
Marquette, Mich	0.10	27	0.16	27	0.25	14
Memphis, Tenn	0.01	10	0.02	10	0.08	10
New York, N. Y	0.16	5	0.27	5	0.75	5
New Orleans, La†						
Norfolk, Va	0.25	6	0.45	6	0.45	6
Philadelphia, Pa	0.25	5	0.33	5	0.42	5
Philadelphia Water Works	0.10	5	0.19	5	0.77	5
Pittsburg, Pa	0.15	3	0.30	3	0.56	3
Portland, Oregon	0.05	28	0.06	28	0.25	28
Saint Louis, Mo†						
Saint Paul, Minn	0.01	27	0.02	27	0.08	27
San Diego, Cal*						
San Francisco, Cal	0.05	22	0.06	22	0.14	22
Savannah, Ga	0.21	26	0.25	26	0.35	26
Washington, D. C	0.25	5	0.28	5	0.70	5
Wilmington, N. C	0.18	6	0.34	6	0.57	3

*Less than 0.05 in 1 hour. †Register not working.

SNOW (in inches and tenths).

The first snow of the season was reported in the Sierra Nevada Mountains near Keeler, Cal., on the 15th; at Hill City, in the Black Hills, South Dakota, and in the Wahsatch and Oquirrh mountains, Utah, on the 23d; at Cheyenne, Laramie, and Saratoga, Wyo., and Leadville, Colo., on the 24th; at Virginia City, Mont., on the 26th; at Joseph, Oregon, on the 29th; and at Fort Assiniboine, Helena, Choteau, and Boulder, Mont., Fort McKinney and Lander, Wyo., Winnemucca, Nev., Baker City, Lakeview, and Weston, Oregon, American Falls and Henrys Lake, Idaho, Snowville and Beaver, Utah, Carson City, Nev., and in the mountains of east-central California on the 30th.

The heaviest snowfall of the month was reported in the mountains of central Colorado, where 5.0 to 10.0 was reported. A depth of 4.2 was noted at Joseph, Oregon; 1.0 to 4.0 fell at points in central Nevada; and 1.0 to 2.0 at stations in Wyoming, south Idaho, and southwest Montana. At other stations reporting snowfall the amount was less than 0.5.

Monthly snowfall was reported as follows: *California.*—Boca, 0.5; Grass Valley, trace. *Colorado.*—Alma, 10; Como (near), 7.7; Platoro, 7; Stamford and Twin Lake, 6; Jefferson, 5.6; Cumbres and Georgetown, 4; Dumont and Red Cliff, trace. *Idaho.*—Henrys Lake, 1; Mullan, trace. *Montana.*—Boulder Valley and Virginia City, 2; Helena, 0.2; Fort Assiniboine and Choteau, trace. *Nevada.*—Eureka, 4; Austin, 1; Reno State University, 0.2; Belmont, Candelaria, Carson City, Ely, Fenelon, Monitors Ranch, Palmetto, and Virginia City, trace. *Oregon.*—Joseph, 4.2; Baker City and Weston, trace. *Utah.*—Snowville, 1; Beaver, trace. *Wyoming.*—Fort Yellowstone, 2.5; Fort Washakie, 2.4; Saratoga, 2; Evanston, 1; Cheyenne, 0.4; Sheridan, 0.2; Lander, 0.1; Laramie, trace.

HAIL.

Description of the more severe hail storms reported for the month is given under "Local storms." Hail was reported as follows: 1st, New York, Pennsylvania. 2d, Illinois, Michigan, New Mexico, and Texas. 3d, Louisiana and North Dakota. 5th, New York and West Virginia. 6th, New York. 7th, Colorado, Michigan, and South Dakota. 8th, Colorado, Michigan, and Oklahoma Territory. 9th, Colorado, Michigan, Montana, and Nevada. 10th, Colorado, Michigan, Mississippi, Nevada, Utah, Wyoming. 11th, Iowa. 12th, Colorado, and New York. 13th, California, Wisconsin. 14th, Maine, Michigan, Minnesota, North Dakota, Texas, and Wisconsin. 15th, California, Indiana, Michigan, New York, Pennsylvania, and Wyoming. 17th, Massachusetts. 18th, Colorado, Maine, Michigan, New Mexico, Vermont, and Washington. 19th, Minnesota, North Dakota, Virginia, and Washington. 20th, North and South Dakota. 22d, Colorado and Washington. 23d, Colorado, Nebraska, and Utah. 24th, Nebraska and New Mexico. 25th, Colorado, New Jersey, and New Mexico. 27th, South Dakota. 28th, Minnesota and South Dakota. 29th, Arizona, Indiana, and Oregon. 30th, Colorado, Nevada, New Mexico, and Oregon.

SLEET.

Sleet was reported as follows: Colorado, 10th and 20th; Mount Washington, N. H., 14th and 15th; and Cheyenne, Wyo., 24th.

WINDS.

The prevailing winds in September, 1891, are shown on Chart I by arrows flying with the wind. In New England, along the eastern slope of the Rocky Mountains, and on the middle Pacific coast southwest to northwest winds were most frequently noted; in the middle Atlantic states they were generally from south to west; in the south Atlantic and east Gulf states, the Florida Peninsula, Kentucky, and Tennessee, from north to east; in the west Gulf States, from northeast to southeast; in the Ohio Valley north of the Ohio River, the Lake region, the extreme northwest, the Missouri Valley, and the plateau region, from southeast to southwest; in the upper Mississippi valley, from south to southwest; on the north Pacific coast, from east to south; and on the south Pacific coast from west to northwest.

HIGH WINDS.

[In miles per hour.]

Wind velocities of 50 miles, or more, per hour were reported at regular stations of the Weather Bureau as follows: 17th, 52, s., at Fort Canby, Wash. 18th, 84, nw., at Mount Washington, N. H.; 58, s., at Fort Canby, Wash.; 19th, 54, sw., at Moorhead, Minn. 22d, 50, s., at Huron, S. Dak. 25th, 99, nw., at Mount Washington, N. H. 28th, 72, se., at Fort Canby, Wash. 29th, 63, se., at Huron, S. Dak. 30th, 50, se., at Moorhead, Minn.; 89, nw., at Mount Washington, N. H.; 50, s., at Sioux City, Iowa.

LOCAL STORMS.

2d.—During a thunderstorm in the afternoon at Mobile, Ala., minor damage was caused by lightning. An unusually severe thunder, wind, and rain storm was reported at East Tawas, Mich., at night. A thunderstorm, with high wind, moved southeast over Concordia, Kans., in the early morning.

3d.—A thunderstorm, with heavy rain, and wind reaching an extreme velocity of 48 miles per hour, occurred at Mobile, Ala., from 5.30 to 7.15 p. m. A thunderstorm, with heavy rain, high wind, and hail, visited Emilie, La., in the afternoon; 1.24 inch of rain fell in 20 minutes, and cane was injured by high wind. At Edgard, La., a hard west-northwest gale prostrated trees and large cane. At Chattanooga, Tenn., a house was struck by lightning.

4th.—Heavy rain fell near San Bernardino and Redlands, Cal., causing a flood at the latter-named place. Rain occurred generally throughout the San Jacinto Valley, Cal.

5th.—A severe wind and rain storm prevailed along the New Jersey coast. An exceptionally heavy rainstorm, with thunder and lightning, continued during the night of the 5–6th at Baltimore, Md., flooding the lower part of the city. Small streams overflowed their banks and flooded low lands in parts of Maryland. A destructive thunder and rain storm was reported at Alliance, Ohio, at night.

6th.—Heavy rain flooded sewers and cellars at New Haven, Conn. A thunderstorm, with excessive rainfall, moved

north over Jacksonville, Fla., in the afternoon; 0.62 inch of rain fell in 5 minutes, and 1.18 in 10 minutes.

7th.—Great damage was caused by high wind along the Nova Scotia coast at night.

8th.—A destructive thunder, wind, and hail storm passed over Oklahoma City, Okla. T., in the evening; 2.64 inches of rain fell in 42 minutes, flooding the town for several hours, and hail fell for 30 minutes, breaking a large quantity of window glass, and destroying crops.

9th.—During a heavy thunderstorm in the early morning at Mesquite, Tex., a barn was struck by lightning and burned; loss about $2,000.

10th.—An unusually severe thunderstorm, with hail, moved eastward over Levan, Utah, in the evening; hail fell for five minutes, some of the hailstones being one inch in diameter, and 0.50 inch of rain fell in 15 minutes. High northerly wind was reported at Beaver, Utah. A thunderstorm, with excessive rain, occurred at Jacksonville, Fla., in the afternoon; 0.90 inch of rain fell in 10 minutes, and damage was caused to electric wires.

12th.—A thunderstorm, with heavy rain and high wind, occurred at Alpena, Mich., about noon; the wind reached an extreme velocity of 60 miles per hour, and the temperature fell 13°.

During a thunderstorm at Davenport, Iowa, in the morning, lightning struck in several places, and telephone wires were burned out.

13th.—In the early morning a barn at South Dartmouth, Mass., was struck by lightning and burned. A barn was also struck by lightning and burned at Ferrysburgh, Mich. A heavy wind, rain, and hail storm caused great damage about Ashland, Wis.

14th.—A thunderstorm moved southeast over Duluth, Minn., in the morning; hail of an unusual size fell for a few minutes; within 3 minutes the barometer rose and fell .15 inch; lightning struck in several places, doing some damage. Very destructive wind, rain, and hail storms were reported in north Wisconsin.

15th.—During a thunderstorm in the morning at Erie, Pa., the electric car line was disabled, and a barn was struck by lightning and burned.

Near Wellsborough, Pa., hail damaged the tobacco crop, several buildings were struck by lightning and burned, causing a loss of $15,000 to $20,000, and a man was reported killed by lightning.

At Keeler, Cal., the wind suddenly veered from south to southwest at 6.50 p. m., and blew at the rate of 49 miles per hour. Heavy storms prevailed in the Sierra Nevada Mountains to the southwest, in the Coso Range, and extended nearly across Owens Lake. Heavy rainstorms were reported along the Carson and Colorado Railway. A thunderstorm passed over Keeler in the evening. The first snow of the season fell in the higher Sierra Nevada Mountains.

At Fresno, Cal., a dust and sand storm occurred at 5 p. m. Heavy drops of rain, with some hail, fell for 10 minutes from 5.10 p. m., when a brisk northwest wind began, and the rain moved down the valley.

16th.—At Sault de Ste. Marie, Mich., a heavy thunderstorm from the southwest began 9.55 a. m. and ended 11.30 a. m. At 11.30 a. m. the wind suddenly increased to 20 miles per hour and reached an extreme velocity of 58 miles at 11.47 a. m. Masters of vessels reported the squall one of the most severe ever experienced in that region, many of them losing all loose articles on deck. During the storm the water in the canal and rapids fell 3 feet, leaving steam barges and other craft aground until 2.35 p. m.

During a thunderstorm in the evening at Berlin, Tex., a house was struck by lightning.

17th.—Severe wind and thunder storms were reported on the east shore of Massachusetts at night. A high northeast wind prevailed at Key West, Fla., reaching a velocity of 30 miles per hour at 10.20 a. m. The wind continued high until the morning of the 18th.

At Napoleon, N. Dak., a heavy gale, with thunder and rain, occurred in the early morning. During a high wind at Seattle, Wash., several buildings were blown down, and a man was reported killed.

18th.—An unusually severe thunder, hail, and rain storm visited parts of Maine at night, and at a number of places buildings were struck by lightning and burned. At Groveton, N. H., a large black cloud approached from the northwest about 4 p. m., attended by high wind and heavy rain; several buildings were moved from their foundations, the damage being estimated at $1,000. A destructive storm was reported at Lancaster, N. H.

At Lunenburgh, Vt., the wind reached a velocity of about 75 miles per hour for 10 to 15 minutes from 4 p. m., blowing down trees, etc. The storm-path was reported about 4 miles in width and 20 miles in length; some hail fell at the beginning of the gale.

A thunderstorm, with strong northwest wind and heavy rain, passed over Hartland, Vt., in the evening. At Northfield, Vt., a barn was struck by lightning and burned.

At Key West, Fla., there were evidences of a cyclonic disturbance to the southward. In the morning there were squalls of rain, and the barometer fell .11 inch from 11 a. m. to 4.30 p. m.

At Thornville, Mich., a barn was struck by lightning and burned. Heavy rain flooded farms in southwest Waukesha county, Wis.

19th.—Heavy storms occurred in west Minnesota and the east part of the Dakotas. High southerly winds prevailed at Moorhead, Minn., in the afternoon. About 4 p. m. heavy cumulus clouds gathered in the southwest. The storm advanced from the southwest with but one peal of thunder at 6.05 p. m., and moved to the north after passing the station, and at 6.25 p. m. it moved back towards the south, with very heavy rain and hail for 10 minutes. The hailstones were of unusual size. The wind reached a velocity of 54 miles per hour. In the north part of Deuel county, S. Dak., and in Lac-qui-Parle county, Minn., a number of buildings were blown down or unroofed by high wind.

20th.—A gale of destructive violence was reported on the Labrador coast. During a thunderstorm in the morning at Key West, Fla., 0.45 inch of rain fell in 5 minutes, 0.65 in 10 minutes, and 1.65 inch in one hour. Heavy rain and high wind prevailed over south Louisiana. At Luling, La., 9.32 inches of rain fell in 4 hours and 10 minutes. At New Orleans, La., the wind reached 48 miles per hour from the northeast in the evening and continued strong until the morning of the 21st. Rain fell heavily, with thunder and lightning, and continued until after midnight.

23d.—A severe wind and rain storm, attended in some localities by hail, caused damage to buildings, etc., in Scotts Bluff county, Nebr., in the afternoon.

24th.—Heavy rain caused washouts on railroads about Santa Fé, N. Mex.

27th.—A heavy thunder, wind, and hail storm caused considerable damage about Webster, S. Dak. A severe windstorm was reported in Bellramie and Itaska counties, Minn.

28–29th.—At Sault de Ste. Marie, Mich., high wind, reaching a maximum velocity of 41 miles per hour from the northwest, compelled all up-bound boats to anchor; several boats were blown aground. Severe westerly gales prevailed over the north part of the Lake region.

At Winnebago, Ill., a barn was struck by lightning and burned on the 28th.

29th.—A thunderstorm, with exceptionally heavy rain, occurred at Elizabeth, Ark., in the morning; the ground was covered to a depth of several inches with water, and cotton and other crops were damaged. Sandstorms were reported in the valleys of southern California, southern Nevada, and Arizona on the 29th and 30th.

INLAND NAVIGATION.

LOW WATER.

On the 3d navigation on the Mississippi River closed at La Crosse, Wis., on account of low water. On the 20th the river reached 7.0 feet on the gauge at Cairo, Ill. Navigation between Saint Louis, Mo., and Cairo was seriously impeded by low water; all New Orleans boats of the Anchor Line were laid up, and but 2 Natchez boats of the same line were running, and they were compelled to transfer freight to barges between Cairo and Saint Louis. Low water caused inconvenience to transfer boats between Cairo and Birds Point, Mo. The morning of the 20th the stage of the water at Memphis, Tenn., was 5.8 feet and falling.

On the 18th the Red River stood at 1.5 foot on the gauge at Shreveport, La., and was navigable only to the smallest steamers. On the 27th at 5 p. m. the river reached 0.2 foot at that point, the lowest stage of the year.

On the 18th the Tennessee River was very low at Chattanooga, Tenn., and navigation was closed to large boats. On the 22d navigation was closed at Florence, Ala., by low water. On the 28th the stage of water at Chattanooga was the lowest of the year, and only light draught, up-river boats were running.

At the close of the month the Iowa River at Amana, Iowa, was lower than noted for several years.

STAGE OF WATER IN RIVERS.

In the following table are shown the danger-points at the various river stations; the highest and lowest stages for the month, with the dates of occurrence, and the monthly ranges:

Heights of rivers above low-water mark, September, 1891 (in feet and tenths).

Stations.	Danger-point on gauge.	Highest water.		Lowest water.		Monthly range.
		Date.	Height.	Date.	Height.	
Red River.						
Shreveport, La	29.9	1	5.5	27	0.4	5.1
Arkansas River.						
Fort Smith, Ark	22.0	1	2.9	30	0.9	2.0
Little Rock, Ark	23.0	1	4.4	30	3.0	1.4
Missouri River.						
Fort Buford, N. Dak	.....	1	7.3	30	5.3	2.0
Pierre, S. Dak	14.0	1	1.6	29, 30	0.2	1.4
Sioux City, Iowa	18.7	1	7.1	25	4.2	2.9
Omaha, Nebr	18.0	1, 2	8.1	27, 28, 30	6.4	1.7
Kansas City, Mo	21.0	1	9.0	30	6.1	2.9
Mississippi River.						
Saint Paul, Minn	14.0	29, 30	1.6	21	1.1	0.5
La Crosse, Wis	13.0	1, 2	2.0	23-30	1.5	0.5
Dubuque, Iowa	16.0	1, 3, 4	1.6	24-30	1.0	0.6
Davenport, Iowa	15.0	3, 4	0.6	25-29	0.1	0.5
Keokuk, Iowa	14.0	1, 2	0.3	27, 28	—0.5	0.8
Saint Louis, Mo	30.0	1	10.1	30	4.6	5.5
Cairo, Ill	40.0	4, 5	14.8	30	3.9	10.9
Memphis, Tenn	33.0	1	11.9	30	3.5	8.4
Vicksburg, Miss	41.0	1	17.5	30	3.8	13.7
New Orleans, La	13.0	13	5.6	20	3.6	2.0
Ohio River.						
Parkersburgh, W. Va	38.0	1	7.3	30	2.2	5.1
Cincinnati, Ohio	45.0	1	17.8	30	5.5	12.3
Louisville, Ky	24.0	1	8.8	30	3.4	5.4
Cumberland River.						
Nashville, Tenn	40.0	1	5.3	30	0.6	4.7
Tennessee River.						
Chattanooga, Tenn	33.0	9	5.8	29, 30	1.9	3.9
Monongahela River.						
Pittsburg, Pa	29.0	7	7.6	2	2.9	4.7
Savannah River.						
Augusta, Ga	32.0	6	13.2	27	5.7	7.5
Willamette River.						
Portland, Oregon	15.0	22	3.7	27, 28	0.6	3.1
Susquehanna River.						
Harrisburg, Pa	17.0	1, 8	4.8	28, 29, 30	1.9	2.9
Alabama River.						
Montgomery, Ala	48.0	9, 13	3.2	27, 28, 30	0.6	2.6

ATMOSPHERIC ELECTRICITY.

AURORAS.

The more widely extended auroral displays reported were observed from New England to Minnesota on the 1st; from New England to Montana and southward to Maryland and southern Ohio on the 9th; in New England, New York, and Pennsylvania, the upper lake region, west Montana, and Washington on the 10th; and from the Atlantic to the Pacific coasts and southward in the central valleys to the 40th parallel on the 11th.

Auroras were reported as follows: 1st, New England, New York, Michigan, and Minnesota. 2d, New England, New York, Wisconsin, and Minnesota. 3d, New England, Illinois, Wisconsin, Iowa, Minnesota, and the Dakotas. 4th, New England and Michigan. 5th, Michigan and the Dakotas. 7th, New England, New York, and Michigan. 8th, New England, New York, Pennsylvania, New Jersey, Michigan, Wisconsin, Iowa, Minnesota, and Montana. 9th, New England, New York, Pennsylvania, New Jersey, Maryland, Ohio, Illinois, Michigan, Wisconsin, Iowa, the Dakotas, Nebraska, Wyoming, and Montana. 10th, New England, New York, Pennsylvania, Michigan, Wisconsin, Iowa, Minnesota, the Dakotas, and Washington. 11th, New England, New York, Pennsylvania, Ohio, Michigan, Illinois, Iowa, the Dakotas, Colorado, Wyoming, Montana, and Washington. 12th, New York, Michigan, Wisconsin, and Montana. 13th, New England. 17th, Ohio and Iowa. 18th, Ohio. 19th, Pennsylvania. 22d, New England. 23d, Wisconsin, Iowa, and Montana. 25th, Iowa. 26th, New England and Minnesota. 27th, New York, Minnesota, Wisconsin, Iowa, and the Dakotas. 28th, New England, New York, Maryland, Ohio, Illinois, Wisconsin, Minnesota, the Dakotas, and Montana. 29th, New England, New York, Michigan, Iowa, the Dakotas, and Montana. 30th, Pennsylvania.

At Sault de Ste. Marie, Mich., an aurora of a grayish tinge extending from northeast to northwest and to altitude about 25° was observed at 10.15 p. m. of the 1st. Beams of light shot out from the east and west sides to altitude 50°.

On the 9th, at 7.30 p. m., an aurora, consisting of a low arch of diffused whitish light tinged at times with yellow and crimson and resting on a dark segment, was observed at Manchester, N. H. The arch was about 15° in width and extended from about 130° to 220° azimuth, and "merry dancers" shot up to altitude 45° to 50°. The display was most brilliant about 9.30 p. m., and disappeared 11.15 p. m. At Boston, Mass., the aurora was observed at 7.55 p. m., when it extended from northeast to north-northwest and about 15° above the horizon. Streamers shot upward at intervals, and the display ended at 9.20 p. m. At Concord, Mass., an aurora consisting of 3 distinct arches with long yellow streamers reaching altitude 80° was observed from 8 p. m. until after midnight. At New London, Conn., an aurora consisting of 2 arches with streamers was observed from 9 to 11 p. m. At Oswego, N. Y., an arch of white light extending from northwest to east and to altitude about 15°, with streamers of a greenish and, at times, of a rosy hue, commenced at 7.45 p. m., and continued during the night. At Buffalo, N. Y., a well-defined arch extending about 25° east and west of north, with luminous beams, was observed from 8.30 p. m. until after midnight. At Detroit, Mich., a diffused white light was observed in the northeast at 8 p. m., from which a single streamer about 6° in width rose slowly to the zenith; the display continued about 8 minutes. At Marquette, Mich., a diffused white light, with a greenish tinge, extending from northwest to northeast, was observed at 8.30 p. m., and disappeared at 10.30 p. m. At Medford, Wis., a display consisting of arches and streamers of great brilliancy was observed from 9 to 10 p. m. At Bismarck, N. Dak., an aurora consisting of an arch which extended from 170° to 250° azimuth and to altitude

about 20° was observed at 9.45 p. m. The arch lasted one hour and was followed by streamers of a pale yellow color, with an apparent movement from east to west. The display disappeared about midnight.

On the 10th an aurora consisting of an arch of white light about 3° in width, extending from east to west, and resting on a dark segment, was observed at Marquette, Mich., from 8.25 to 8.55 p. m., with a few beams of pale white light.

At Buffalo, N. Y., the most brilliant aurora observed in years was noted on the 11th. The display appeared as a well-defined arch about 5° in width extending about 60° east and west of north at 8.50 p. m. At 10.48 p. m. a second arch appeared. The display ended 11.45 p. m. At Alpena, Mich., a fan-shaped aurora, with the point resting on the horizon, and a lateral movement from west to east, was observed from 10.15 to 11.55 p. m. At Bismarck, N. Dak., an aurora consisting of an irregular display of streamers in the north commenced at 9 p. m. At 10 p. m. what appeared to be an immense ball of fire was observed in the northwest quadrant, where it remained 15 minutes with very brilliant streamers having an apparent motion from east to west. The display disappeared 11.30 p. m. At Rapid City, S. Dak., an aurora was first observed at 10.30 p. m. At 11.05 p. m. an arch resting on a dark base extended from 135° to 215° azimuth and about half way to the zenith, with a few small beams of light. The display continued until the morning of the 12th.

THUNDERSTORMS.

Description of the more severe thunderstorms reported for the month is given under "Local storms."

Thunderstorms were reported as follows: East of the Rocky Mountains they were reported in the greatest number of states, 22, on the 28th; in 15 to 20 on the 1st to 3d, 5th, 13th to 15th, 17th to 19th, 27th, and 29th; in 10 to 14 on the 6th, 8th, 11th, 12th, 16th, 20th, 24th, and 26th; in 5 to 9 on the 4th, 7th, 9th, 10th, 21st to 23d, 25th, and 30th. There was no date for which thunderstorms were reported east of the Rocky Mountains in less than 5 states.

East of the Rocky Mountains thunderstorms were reported on the greatest number of dates, 29, in Florida; on 22 in Texas; on 15 to 20 in Iowa, Kansas, Louisiana, Michigan, Nebraska, New York, and South Dakota; on 10 to 14 in Illinois, Minnesota, Missouri, New Jersey, North Carolina, North Dakota, Ohio, Pennsylvania, and Wisconsin; on 5 to 9 in Arkansas, Connecticut, Kentucky, Maine, Maryland, Massachusetts, Mississippi, South Carolina, Tennessee, Vermont, and Virginia; and on 1 to 4 in Alabama, District of Columbia, Georgia, Indiana, Montana, New Hampshire, Oklahoma Territory, Rhode Island, and West Virginia. In Delaware and Indian Territory no thunderstorms were reported.

West of the Rocky Mountains thunderstorms were reported in Arizona on the 2d, 9th, 10th, 16th, 17th, 20th to 24th, and 29th; in California on the 2d to 7th, 13th, 15th, and 21st; in Colorado on the 1st to 7th, 9th to 12th, 14th, 18th, 19th, 21st to 27th, and 30th; in Idaho on the 9th and 27th; in Nevada on the 3d, 5th to 10th, 15th, and 22d; in New Mexico on the 1st, 2d, 6th, 7th, 14th, 18th to 25th, 29th, and 30th; in Oregon on the 2d, 3d, 7th, 12th, 13th, 18th, and 28th to 30th; in Utah on the 1st, 3d, 4th, 6th, 7th, 9th to 11th, 15th, 16th, 18th, and 21st to 25th; in Washington on the 3d, 9th, 13th, 17th to 19th, 21st, 22d, and 28th; and in Wyoming on the 1st, 8th, 10th, 15th, 23d, 24th, and 27th.

MISCELLANEOUS PHENOMENA.

DROUGHT.

Very dry weather prevailed in western New England, parts of Maryland, western Virginia, central Alabama, western Florida, in Mississippi and eastern Louisiana, Tennessee, Arkansas, Missouri, Illinois, eastern Ohio, central and southern Wisconsin, Iowa, South Dakota, Nebraska, eastern Kansas, and central New Mexico. In New England a scarcity of water caused the closing of mills, and in a number of the Southern and Western States drought injured crops and caused a suspension of farm work.

Cane, rice, and cotton were injured in Louisiana. Crops of all kinds were damaged and farming operations were almost entirely suspended in Tennessee and Arkansas. Drought was general in Illinois. In Ohio fall pasturage and the water supply were seriously affected. Streams were low and wells were failing in parts of Iowa.

PRAIRIE AND FOREST FIRES.

On the 17th and 18th extensive prairie fires were reported in parts of North Dakota, and near Rapid City, S. Dak., and on the 27th, in Emmons county, N. Dak., in northern South Dakota, and in Chippewa county, Wis.

On the 24th forest fires were reported in Barron, Polk, Washburn, Wood, Burnett, and Waupaca counties, Wis.; from the 24th to 27th near Osceola Mills, Wis.; and on the 29th in El Dorado county, Cal.

STATE WEATHER SERVICES.

[*Temperature in degrees Fahrenheit; precipitation, including melted snow, in inches and hundredths.*]

The following extracts and summaries are republished from reports for September, 1891, of the directors of the various state weather services:

ALABAMA.

Temperature.—The mean was 6.3 below the normal; maximum, 95, at Wiggins, 19th, 22d, and 23d; minimum, 46, at Jasper, 24th; greatest monthly range, 45, at Brewton; least monthly range, 30, at Union Springs, Citronelle, Selma, and Goodwater.

Precipitation.—The average was 0.37 below the normal; greatest monthly, 6.90, at Fort Deposit; least monthly, 0.20, at Chepultepec.

Wind.—Prevailing direction, northeast.—*P. H. Mell, Observer, Weather Bureau, Auburn, director.*

ARKANSAS.

Temperature.—The mean was 0.8 below the normal; maximum, 102, at Lead Hill, 24th; minimum, 40, at Rogers, 4th; greatest monthly range, 57, at Lead Hill; least monthly range, 22, at Winslow.

Precipitation.—The average was 2.50 below the normal; greatest monthly, 5.80, at Texarkana; least monthly, 0.00, at Gaines Landing and Harrisburgh.

Wind.—Prevailing direction, southeast.—*M. F. Locke, Commissioner of Agriculture, Little Rock, director; F. H. Clarke, Observer, Weather Bureau, assistant.*

COLORADO.

Temperature.—The mean was above the average at all stations, and at points in the Arkansas Valley was the highest on record; the maximum at Cheyenne Wells, 104, 14th, was the highest maximum on record for September; minimum, 21, at Alma, 23d, and at Cumbres, 27th.

Precipitation.—The average was greatest west of the range, and least in the upper Arkansas valley and in the southeastern counties; greatest monthly, 7.32, at Cumbres; least monthly, 0.12, at Byers.—*W. S. Miller, Observer, Weather Bureau, Denver, director.*

ILLINOIS.

Temperature.—The mean was 4.5 above the normal of the last 16 years; maximum, 100, at Pontiac, 23d, at Griggsville, 24th, at Greenville, 24th and 25th, and at Carlinville, 26th; minimum, 37, at Hennepin, 4th.

Precipitation.—The average was 2.07 below the normal; greatest monthly, 2.02, at White Hall; least monthly, 0.15, at Beason.

Wind.—Prevailing direction, southwest.—*John Craig, Observer, Weather Bureau, Springfield, director.*

INDIANA.

Temperature.—Maximum, 98, at Princeton, 24th and 25th; minimum, 36, at Marion, 14th; greatest monthly range, 56, at Point Isabel; least monthly range, 35, at Butlerville.

Precipitation.—Greatest monthly, 5.65, at Huntingburgh; least monthly, 0.34, at Valparaiso.

Wind.—Prevailing direction, south.—*Prof. H. A. Huston, La Fayette, director; C. F. R. Wappenhans, Observer, Weather Bureau, assistant.*

IOWA WEATHER AND CROP SERVICE.

The month was remarkable for high temperature, and the last half of the month was warmer than any corresponding period on record.

Temperature.—Maximum, 104, at Glenwood, 22d; minimum, 28, at Greenville, 6th; greatest monthly range, 67, at Atlantic; least monthly range, 38, at Washington.

Precipitation.—The average was below the normal; greatest monthly, 3.60, at Eagle Grove; least monthly, 0.13, at Hopeville.

Wind.—Prevailing direction, south.—*J. R. Sage, Des Moines, director; G. M. Chappel, Observer, Weather Bureau, assistant.*

KANSAS.

Temperature.—Maximum, 107, at Columbus, 20th, 22d, and 24th; minimum, 31, at Agricultural College, Lebo, and Seneca, 29th; greatest monthly range, 68, at Columbus; least monthly range, 48, at Weskan.

Precipitation.—Greatest monthly, 8.60, at Morton; least monthly, 0.15, at La Harpe.

Wind.—Prevailing direction, south.—*Prof. J. T. Lovewell, Topeka, director; T. B. Jennings, Observer, Weather Bureau, assistant.*

KENTUCKY.

Temperature.—The mean was nearly normal; maximum, 97, at Frankfort, 22d and 23d; minimum, 42, at Harrodsburgh, 9th; greatest monthly range, 54, at Harrodsburgh; least monthly range, 35, at Caddo.

Precipitation.—The average was about 0.50 below the normal; greatest monthly, 3.03, at Pellville; least monthly, 0.33, at Canton.

Wind.—Prevailing direction, south.—*Prof. E. H. Mark, Louisville, director; Frank Burke, Observer, Weather Bureau, assistant.*

LOUISIANA.

Temperature.—The mean was nearly normal; maximum, 100, at Liberty Hill, 15th; minimum, 42, at Winnsborough, 4th; greatest monthly range, 56, at Winnsborough; least monthly range, 20, at Port Eads.

Precipitation.—The average was deficient; greatest monthly, 11.17, at Luling; least monthly, trace, at Winnsborough.

Wind.—Prevailing direction, northeast.—*George E. Hunt, Observer, Weather Bureau, New Orleans, director.*

MARYLAND.

Temperature.—Maximum, 92, at Kirkwood, Del., 19th; minimum, 42, at Mount Saint Marys, 9th; greatest monthly range, 48, at Mount Saint Marys; least monthly range, 20, at Jewell.

Precipitation.—Greatest monthly, 6.75, at Summit Hall; least monthly, 0.53, at Barren Creek Springs.

Wind.—Prevailing direction, northwest.—*Dr. William B. Clark, Johns Hopkins University, Baltimore, director; Prof. Milton Whitney, Maryland Agricultural College, secretary and treasurer; C. P. Cronk, Observer, Weather Bureau, in charge.*

MICHIGAN.

Temperature.—Maximum, 101, at Caldwell, 20th; minimum, 24, at Gaylord, 30th; greatest monthly range, 65, at Caldwell; least monthly range, 34, at Bell Branch.

Precipitation.—Greatest monthly, 3.96, at Thornville; least monthly, 0.44, at Montague.

Wind.—Prevailing direction, southwest.—*N. B. Conger, Observer, Weather Bureau, Detroit, director.*

MINNESOTA.

Temperature.—The mean was 6.0 to 7.0 above the normal; maximum, 101, at Montevideo; minimum, 32, at Crookston, 29th, and at Moorhead, 3d; greatest monthly range, 68, at Montevideo; least monthly range, 41, at Lake Winnibigoshish.

Precipitation.—The average was 1.00 to 2.00 below the normal, except in the Red River Valley, where a slight excess was reported; greatest monthly, 4.31, at Lake Winnibigoshish; least monthly, 0.79, at Montevideo.

Wind.—Prevailing direction, south.—*J. H. Harmon, Observer, Weather Bureau, Minneapolis, director.*

MISSISSIPPI.

Temperature.—The mean was 0.5 above the normal; maximum, 104, at Louisville, 23d; minimum, 42, at Water Valley, 5th; greatest monthly range, 60, at Louisville; least monthly range, 21, at Bay Saint Louis.

Precipitation.—The average was 2.74 below the normal; greatest monthly, 7.90, at Bay Saint Louis; least monthly, 0.00, at Okolona and Kosciusko.—*R. B. Fulton, Observer, Weather Bureau, University, director.*

MISSOURI.

Temperature.—Cool waves passed over the state on the 4th and 29th, resulting in light frost on the latter date; the mean was 3.0 above the normal; maximum, 104, at Oak Ridge, 24th.

Precipitation.—The rainfall was very limited, more so than for any September on record; from only 7 points in the state was more than 1.00 reported, the greatest being 1.95 at Jefferson City.—*Levi Chubbuck, Secretary of State Board of Agriculture, Columbia, director.*

NEBRASKA.

Temperature.—The mean was 5.0 above the normal, and was the highest on record for September; light frosts occurred on the 3d and 29th, the latter doing slight damage in some localities.

Precipitation.—The rainfall varied from 1.00 to 3.00; in the south-central part there was an area of more abundant rainfall, reaching a maximum of 4.95 at Holdredge.

Wind.—Prevailing direction, south.—*Prof. Goodwin D. Swezey, Crete, director; G. A. Loveland, Observer, Weather Bureau, assistant.*

NEVADA.

Temperature.—The mean was 5.1 below the normal; maximum, 98, at Palisade and Wabuska, 1st; minimum, 5, at Eureka, 30th.

Precipitation.—The average was 0.24 above the normal; snow fell in portions of the state during the last decade of the month.—*Prof. Charles W. Friend, Carson City, director; F. A. Carpenter, Observer, Weather Bureau, assistant.*

NEW ENGLAND METEOROLOGICAL SOCIETY.

Temperature.—The mean was 3.4 above the normal; maximum, 92, at Farmington, 25th; minimum, 30, at Berlin Mills, 9th; greatest monthly range, 62, at Farmington; least monthly range, 25, at Block Island.

Precipitation.—The average was 0.90 below the normal; greatest monthly, 5.57, at Cotuit; least monthly, 0.74, at Williamstown.

Wind.—Prevailing direction, southwest.—*Prof. William H. Niles, Boston, Mass., president; Prof. Winslow Upton, Providence, R. I., secretary; J. Warren Smith, Observer, Weather Bureau, assistant.*

NEW JERSEY.

Temperature.—The mean was 3.4 above the normal; maximum, 94, at Tenafly, 18th; minimum, 39, at Tenafly, 10th; greatest monthly range, 55, at Tenafly; least monthly range, 34, at Asbury Park.

Precipitation.—The average was 1.43 below the normal; greatest monthly, 5.91, at Oceanic; least monthly, 0.90, at Atlantic City.

Wind.—Prevailing direction, southeast.—*E. W. McGann, Observer, Weather Bureau, New Brunswick, director.*

NEW MEXICO.

Temperature.—Maximum, 96, at Los Lunas, 3d; minimum, 27, at Monero, 19th and 20th; greatest monthly range, 60, at Chama; least monthly range, 44, at Santa Fé.

Precipitation.—The rainfall was unusually heavy in the northern part of the territory, and at Santa Fé it was the heaviest recorded since the establishment of the station in 1871; greatest monthly, 5.25, at Chama; least monthly, 0.90, at Los Lunas.—*H. B. Hersey, Observer, Weather Bureau, Santa Fé, director.*

NEW YORK.

Temperature.—The average was 3.8 above the normal; maximum, 93, at Geneva, 17th; minimum, 26, at Keene Valley, 30th; greatest monthly range, 65, at Keene Valley; least monthly range, 34, at Setauket.

Precipitation.—The average was 1.54 below the normal; greatest monthly, 4.35, at Minnewaska; least monthly, 0.49, at Addison.—*Prof. E. A. Fuertes, Dean of the College of Civil Engineering, Cornell University, Ithaca, director; R. M. Hardinge, Observer, Weather Bureau, assistant.*

NORTH CAROLINA.

The month was characterized by the large number of clear days. The abundant sunshine and warmth were greatly needed and were most favorable for maturing and gathering crops.

Temperature.—The mean was normal; maximum, 93, at Mount Airy, 28th; minimum, 43, at Asheville, 15th; greatest monthly range, 15, at Mount Airy; least monthly range, 17, at Hatteras.

Precipitation.—The average was 2.92 below the normal; greatest monthly, 5.04, at Southport; least monthly, 0.55, at Concord.

Wind.—Prevailing direction, northeast.—*Dr. Herbert B. Battle, Raleigh, director; C. F. von Herrmann, Observer. Weather Bureau, assistant.*

NORTH DAKOTA.

Temperature.—The mean was 6.0 above the normal, and was highest on record for September; maximum, 97, at Grand Rapids, 21st, and at Steele, 18th; minimum, 19, at Willow City, 19th; greatest monthly range, 73, at Grand Rapids and Willow City; least monthly range, 51, at Fort Buford.

Precipitation.—The average was about normal; greatest monthly, 3.50, at Moorhead, Minn.; least monthly, 0,66, at Fort Buford.

Wind.—Prevailing direction, southeast.—*W. H. Fallon, Observer, Weather Bureau, Bismarck, director.*

OHIO.

Temperature.—The mean was 3.0 above the normal; maximum, 99, at Waverly, 19th; minimum, 36, at Granville, 9th.

Precipitation.—The average was 1.60 below the normal; greatest monthly, 3.01, at Elyria; least monthly, 0.31, at Marion.—*Prof. B. F. Thomas, Columbus, director; C. M. Strong, Observer, Weather Bureau, secretary and assistant.*

OREGON.

The month opened warm and closed with clear, cool weather and general light frosts.

Temperature.—The mean was 0.7 above the normal; maximum, 100, at Lakeview, 2d; minimum, 22, at Weston and Beulah, 30th.

Precipitation.—The average was 0.70 above the normal; greatest monthly, 6.14, at Astoria; least monthly, 0.00, at New Bridge.

Wind.—Prevailing direction, southwest.—*Hon. H. E. Hayes, Master State Grange, Portland, director; B. S. Pague, Observer, Weather Bureau, asst.*

PENNSYLVANIA.

Temperature.—The mean was 5.4 above the normal; maximum, 94, at Coatsville, 26th, and at Somerset, 17th; minimum, 32, at Wellsborough and Columbus, 30th; greatest monthly range, 61, at Somerset; least monthly range, 37, at Erie.

Precipitation.—The average was 1.18 below the normal; greatest monthly, 5.00, at Kennett Square; least monthly, 1.05, at Carlisle.

Wind.—Prevailing direction, southwest.—*Under direction of the Franklin Institute, Philadelphia; L. M. Dey, Observer, Weather Bureau, assistant.*

SOUTH CAROLINA.

Temperature.—Maximum, 92, at Batesburgh, Greenville, and Spartanburgh, 19th, and at Columbia, 23d; minimum, 50, at Spartanburgh, 28th.

Precipitation.—Greatest monthly, 6.06, at Charleston; least monthly, 0.49, at Greenville.

Wind.—Prevailing direction, northeast.—*A. P. Butler, Observer, Weather Bureau, Columbia, director.*

SOUTH DAKOTA.

Temperature.—The mean was about 8.0 above the normal; maximum, 107, at Forest City, 16th; minimum, 24, at Brookings, 29th; greatest monthly range, 76, at Webster; least monthly range, 53, at Spearfish.

Precipitation.—The average was 0.67 below the normal; greatest monthly, 4.11, at Webster; least monthly, 0.18, at Kimball.

Wind.—Prevailing direction, south.—*S. W. Glenn, Observer, Weather Bureau, Huron, director.*

TENNESSEE.

The most marked features of the month were the deficiency in rainfall and the abnormally high temperature. These conditions rendered the month rather disastrous to farmers.

Temperature.—The mean was 2.0 above the normal; maximum, 100, at Arlington, 22d; minimum, 44, at Arlington, 4th; greatest monthly range, 56, at Arlington, least monthly range, 18, at Lewisburgh.

Precipitation.—The average was 2.30 below the normal; greatest monthly, 3.08, at Bethel Springs; least monthly, 0.00, at Waynesborough.

Wind.—Prevailing directions, north and east.—*J. D. Plunket, M. D., Nashville, director; J. B. Marbury, Observer, Weather Bureau, assistant.*

TEXAS.

Temperature.—The mean was about normal in the eastern part of the state, and above the normal in all other parts, except along the immediate coast, where there was a slight deficiency, amounting in some localities to 3.0; maximum, 100, at Graham, 12th; minimum, 40, at Orange, 7th, and at Hansford, 3d; greatest monthly range, 55, at Hansford; least monthly range, 20, at Galveston.

Precipitation.—The average was about normal over the central and southwestern parts of the state, and the rainfall was deficient in the extreme eastern and northwestern parts, and over the coast region it was unevenly distributed; greatest monthly, 11.49, at Brazoria; least monthly, 0.23, at El Paso.—*D. D. Bryan, Galveston, director; I. M. Cline, Observer, Weather Bureau, assistant.*

UTAH.

Temperature.—The mean was above the normal during the first half of the month, and below during the latter half; maximum, 104, at Saint George, 3d; minimum, 28, at Scofield, 30th.

Precipitation.—The average was slightly above the normal; greatest monthly, 3.60, at Losee; least monthly, 0.62, at Deseret.—*G. N. Salisbury, Observer, Weather Bureau, Salt Lake City, director.*

VIRGINIA.

Temperature.—Maximum, 100, at Richmond, 19th; minimum, 42, at Dale Enterprise, 9th; greatest monthly range, 53, at Nottoway, C. H., and Richmond; least monthly range, 31, at Norfolk.

Precipitation.—Greatest monthly, 3.40, at Stanardsville; least monthly, 0.98, at Wytheville.—*Dr. E. A. Craighill, Lynchburgh, director; J. N. Ryker, Observer, Weather Bureau, assistant.*

WASHINGTON.

Temperature.—Maximum, 90, at Fort Simcoe, 3d; minimum, 26, at Waterville, 20th; greatest monthly range, 62, at Baker City, Oregon; least monthly range, 29, at East Sound.

Precipitation.—Greatest monthly, 11.06, at Tatoosh Island; least monthly, 0.06, at Fort Simcoe.

Wind.—Prevailing direction, south.—*E. B. Olney, Observer, Weather Bureau, Olympia, director.*

WISCONSIN.

Temperature.—Maximum, 98, at Whitehall, 18th; minimum, 27, at Florence, 4th.

Precipitation.—Greatest monthly, 2.91, at Plover; least monthly, 0.02, at Cadiz.—*W. L. Moore, Observer, Weather Bureau, Milwaukee, director.*

CONTRIBUTIONS AND ORIGINAL ARTICLES.

FLUCTUATIONS OF TEMPERATURE AND PRESSURE AT THE BASE AND SUMMIT OF MOUNT WASHINGTON.

[By Prof. H. A. HAZEN, Weather Bureau.]

At the end of the maps in this Review will be found a continuation of the curves previously published in July and August. There have been added this month the fluctuations in pressure at the summit as well as at the base. It will be noted that these pressure changes present almost exactly the same phase at the summit as at the base. Frequently the summit curve lags a little behind that at the base, as has already been noted. See Annual Report of the Chief Signal Officer, 1882, pp. 897–926.

Attention is called to the remarkable abruptness of the fluctuations of temperature at Mount Washington, especially when the temperature falls after a storm has passed and a high area approaches. Examples of this may be noted as follows: January 9, 1879, fall of 22° in 8 hours; January 25, 1879, 32° in 16 hours; February 1, 1880, 38° in 16 hours; February 9, 1880, 20° in 8 hours; March 7, 1880, 26° in 8 hours; January 22, 1882, 41° in 16 hours; February 17, 1882, 29° in 8 hours; and March 24, 1882, 24° in 8 hours.

These very rapid falls in temperature may be due to the downward action of a cold wave as a storm passes off. It invariably occurs on the east side of a high area and many hours before its center reaches the summit.

It should also be noted that the close agreement between the fluctuations of temperature at the base and summit seems to indicate some general and far-reaching effect produced by extended waves of heat and cold, rather than a more or less local effect produced by the wind or by more intense radiation to the sky at some times rather than others.

METEOROLOGICAL TABLES.

Meteorological record of Army post surgeons, voluntary, and other co-operating observers, September, 1891.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean.	Precip'n.	Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Alabama.	°	°	°	*Ins.*	*Alabama*—Cont'd.	°	°	°	*Ins.*
Bermuda *†	90	56	74.3	4.07	Double Springs †	89	55	70.6	2.85
Bessemer	94	50	74.3	1.21	Eufaula (2)	90	56	74.3	0.77
Brewton †	93	50	76.0	2.00	Evergreen†	92	50	73.0	3.81
Carrolton †	92	54	72.4	1.25	Florence†				0.57
Chepultepec †	80	46	67.5	0.20	Fort Deposit†	92	54	73.1	6.90
Citronelle †	90	60	77.0	2.23	Gadsden †				3.59
Columbiana †				3.11	Goodwater †	87	57	73.5	4.80
Cordova †				3.00	Greensborough	92	60	77.0	1.70
Decatur (1) †				0.87	Jasper †	90	46	69.9	2.73
Decatur (2) †	92	48	70.4	1.20	Livingston (1) * †	90	53	73.0	0.87

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.	Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean.	Precip'n.
Alabama—Cont'd	°	°	°	*Ins.*	*Alabama*—Cont'd	°	°	°	*Ins.*
Livingston (2) †	92	52	74.2	1.01					
Lynn†				1.32	Talladega †				1.57
Mt. Vernon B'ks	93	56	76.4	3.85	Tallassee Falls †				2.29
Opelika†	90	50	70.3	0.94	Thomasville†	90	54	72.6	1.60
Orrville†	93	52	75.0	1.98	Tuscaloosa †	94	53	74.8	1.46
Oxanna†	90	52	72.3	2.31	Tuscumbia (1) †	93	54	71.5	0.75
Pine Apple†	93	53	73.2	3.25	Tuscumbia (2) †	94	51	72.0	0.70
Pushmataha †	91	57	75.7	0.82	Union Springs †	91	61	72.8	3.59
Selma (1) †				1.93	Uniontown †	92	55	75.2	2.02
Selma (2) †	94	54	76.8	1.90	Valley Head †	92	48	68.4	2.70
Sturdevant†				3.19	Warrior †				3.62

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Alaska.	°	°	°	*Ins.*
Juneau†	74	31	50.1	10.30
Killisnoo†	64	31	45.0	8.25
Arizona.				
Ariz. Can. Co. Dam.†	111	55	84.9	0.18
Benson*	92	63	78.0	0.34
Buckeye†	.....	.....	.....	T.
Calabasas *†	92	53	72.6	0.35
Casa Grande*	110	64	86.8	0.00
Chiricahua Mts †	.....	.....	.....	8.24
Crittenden	.....	.....	.....	0.31
Dos Cabezos †	.....	.....	.....	0.79
Dragoon Summit*	92	60	77.4	0.14
Dudleyville†	99	47	78.7	0.22
Eagle Pass	.....	48	68.0	0.19
Farleys Camp	.....	.....	81.4	0.70
Florence†	108	46	81.5	0.24
Fort Apache	92	33	64.8	1.81
Fort Bowie	94	52	73.8	0.61
Fort Grant	99	50	74.2	1.21
Fort Huachuca	94	41	69.8	1.12
Fort Mohave†	115	55	84.0	0.00
Gila Bend (1) *†	106	70	87.2	0.00
Gila Bend (2) *	113	64	90.8	0.08
Grand Central Mill	.....	.....	.....	0.27
Holbrook †	94	35	66.0	0.78
Maricopa(1) *	120	68	87.2	0.13
Mount Huachuca †	94	43	71.4	0.87
Natural Bridge†	.....	.....	.....	0.93
New River†	103	57	80.2	0.27
Oracle †	97	48	75.2	.....
Oro	.....	.....	.....	1.15
Pantano*	100	63	79.1	0.50
Payson	.....	.....	.....	0.99
Red Rock	.....	.....	.....	0.00
Saint Johns†	.....	.....	.....	1.06
San Carlos	110	41	78.3	0.75
San Simon*	108	54	88.3	1.18
Show Low	.....	.....	.....	1.28
Signal	107	54	81.4	0.48
Strawberry†	.....	.....	.....	1.22
Teviston	.....	.....	.....	0.70
Texas Hill*	113	69	87.4	0.20
Tucson (1)†	103	49	81.2	0.48
Tucson (2) *	100	60	81.2	0.65
Walnut Grove †	.....	.....	.....	0.44
Walnut Ranch†	.....	.....	.....	0.88
Whipple Barracks	97	37	64.8	1.48
Willcox*	106	48	79.2	0.22
Wilgus†	.....	.....	.....	1.03
Woodruff †	.....	.....	.....	1.30
Yuma*	116	70	87.1	0.03
Arkansas.				
Arkadelphia †	.....	.....	.....	2.38
Arkansas City †	.....	.....	.....	0.27
Black Rock *†	98	48	75.9	0.38
Brinkley †	94	46	72.1	0.40
Camden †	93	50	73.6	1.45
Conway *	92	53	71.6	0.67
Corner Stone *	90	51	73.8	0.20
Dallas †	94	48	70.8	2.33
Dardanelle†	.....	.....	.....	1.00
Devall Bluff†	99	45	72.2	0.45
El Dorado †	91	46	71.8	0.36
Fayetteville †	94	42	70.1	1.55
Forrest City †	96	48	74.7	0.53
Fulton	.....	.....	.....	2.14
Gaines Landing †	.....	.....	.....	0.00
Harrisburg†	93	62?	77.6	0.00
Helena (1)†	.....	.....	.....	0.38
Helena(2)†	96	48	74.4	0.31
Hot Springs	96	47	75.0	0.82
Lead Hill*	102	45	75.6	0.33
Lonoke*	95	52	75.6	0.12
Madding	.....	.....	.....	0.37
Malvern†	95	51	75.1	2.09
Monticello†	94	46	74.8	1.00
Mount Nebo †	88	51	71.8	0.53
New Gascony	.....	.....	.....	0.60
Newport(1)†	.....	.....	.....	0.65
Newport(2)†	97	50	74.6	0.54
Osceola †	92	52	71.6	0.78
Ozone †	89	48	70.9	0.92
Paragould†	.....	.....	.....	0.50
Pine Bluff†	94	49	74.2	0.28
Prescott †	93	50	75.0	3.12
Rogers †	94	40	70.3	1.01
Russellville †	.....	.....	.....	0.70
Stuttgart †	94	46	72.0	0.03
Texarkana †	94	51	75.4	5.80
Winslow †	82	51	71.6	0.61
California.				
Alcatraz Island	76	37	58.6	0.82
Almaden*	92	52	65.9	0.38
Anaheim*	106	60	75.5	0.00
Angel Island	87	47	63.0	1.13
Antioch*	95	58	71.5	0.75
Aptos*	80	47	62.4	1.00
Athlone*	108	53	77.3	0.18
Auburn	98	50	70.1	0.00
Bakersfield*	104	57	77.1	0.12
Ballast Point L. H	.....	.....	.....	0.00
Barstow †	106	49	73.8	0.08
Beaumont*	96	56	73.3	0.48
Belmont*	86	54	68.6	.....
Benicia Barracks	92	45	67.9	0.98
Berendo *	107	53	73.5	0.30
Berkeley	85	48	61.3	0.74
Bishop Creek*	100	42	72.3	0.19
Boca*	95	30	54.2	0.60
Borden*	104	55	75.1	0.04
Boulder Creek*	108	38	59.2	1.17
Brentwood*	103	52	70.3	0.30
Brighton*	105	58	74.0	0.00
Byron*	100	60	74.9	0.27
Caliente*	100	50	72.7	0.53
Calistoga*	91	50	68.5	0.47
C. Mendocino L. H.	.....	.....	.....	3.22
Castroville *	80	52	63.6	0.21
Centreville *	94	53	67.6	0.21
Chico*	99	58	75.4	0.16
Cisco*	82	29	51.3	0.21
Colfax*	98	45	66.8	0.00
Colton *	104	52	73.8	0.00
Corning*	105	50	73.0	0.00
Crescent City	.....	.....	.....	2.96
Crescent City L. H.	.....	.....	.....	2.97
Delano *	106	56	76.9	0.38
Delta *	104	44	69.1	1.31
Downey*	102	60	76.0	0.00
Dunnigan*	98	58	74.7	0.45
Dunsmuir *	96	42	61.5	1.52
East Brother L. H.	.....	.....	.....	0.55
Edgwood *	87	39	58.0	0.84
El Casco*	105	51	72.5	0.00
El Dorado *	103	53	70.5	0.09
Elmira*	106	58	73.1	0.35
El Verano*	92	52	67.4	0.40
Emigrant Gap *	83	30	56.2	0.00
Esparto *	98	55	74.5	1.11
Evergreen	.....	.....	.....	0.35
Farmington*	103	53	72.9	0.00
Felton *	99	44	64.2	1.46
Fernando *	104	57	73.5	0.12
Florence*	94	55	72.0	0.00
Folsom *	102	55	74.6	0.00
Fort Bidwell	93	30	58.2	0.13
Fort Gaston	99	36	63.4	1.01
Fort Mason	79	49	63.4	0.77
Fresno*	103	54	79.1	0.39
Fruto*	105	55	73.7	0.15
Galt*	103	55	75.0	0.00
Georgetown†	94	40	66.8	0.17
Gilroy *	98	50	67.5	0.03
Girard *	100	40	64.1	0.42
Glen Ellen*	93	50	65.1	0.42
Goshen *	105	58	74.0	0.05
Grass Valley	.....	.....	.....	0.21
Haywards *	80	50	63.6	0.14
Hollister*	100	54	71.2	0.00
Hornbrook*	98	39	64.8	0.55
Humboldt L. H.	.....	.....	.....	1.24
Hydesville †	76	40	57.0	0.77
Indio *	114	60	88.2	0.00
Ione *	100	50	71.9	0.27
Iowa Hill*	96	45	67.4	0.30
Julian†	95[b]	40[b]	66.5[b]	0.81
Keeler *	97	43	72.0	0.19
Keene *	97	50	67.5	0.22
King City *	102	42	67.4	0.00
Kingsburgh *	100	55	74.9	0.00
Knight's Landing*	102	58	74.7	0.00
Lathrop *	103	50	70.5	0.10
Laurel *	101	49	65.6	0.70
Lemoore*	106	53	74.9	0.02
Lime Point L. H.	.....	.....	.....	2.08
Livermore*	92	52	66.6	1.32
Livingston*	105	52	76.7	0.50
Long Beach*	98	52	69.1	.....
Los Angeles*	93	58	73.6	0.10
Los Banos *	102	60	76.7	0.20
Los Gatos (1) *	98	46	64.7	0.47
Los Gatos (2)	88	42	64.2	0.48
Mammoth Tank *	113	70	92.6	0.00
Mare Island L. H.	.....	.....	.....	0.68
Martinez*	84	52	66.3	0.89
Marysville (1) *	93	53	75.0	0.00
Marysville (2) *	100	51	72.7	0.00
Menlo Park *	88	47	64.8	0.28
Merced *	107	52	79.8	0.00
Milton (near)*	95	47	70.0	0.23
Modesto *	101	64	77.2	0.23
Mohave*	105	45	74.7	0.33
Monson *	103	50	76.0	0.34
Montague *	94	48	70.5	0.15
Monterey *	84	48	62.6	0.11
Monterey (Hotel del Monte)*	82	50	65.2	.....
Napa City (2) *	85	44	62.7	0.85
National City †	95	51	72.2	0.04
Needles †	114	56	85.6	0.80
New Castle†	104	44	71.6	T.
Newhall *	108	50	74.0	0.13
Newman *	103	64	79.4	0.49
Niles *	90	44	63.6	0.20
Nordhoff†	106	38	69.4	0.25
Norwalk *	100	54	70.7	0.00
Oakland (1)	86	46	62.2	0.87
Oakland (2) *	72	54	61.7	0.43
Ogilby *	116	62	91.3	0.02
Oleta	96	43	69.3	0.12
Orangevale†	102	40	70.4	T.
Orland *	108	53	76.8	0.09
Oroville*	98	47	68.2	0.03
Pajaro *	86	46	62.7	0.20
Palermo †	96	44	72.8	0.16
Paso Robles*	103	43	68.2	0.41
Petaluma	92	50	65.9	0.20
Piedras Blancas L.H	.....	.....	.....	0.00
Pigeon Point L. H.	.....	.....	.....	0.67
Placerville (1) *	98	47	69.3	0.45
Pt. Ano Nuevo L.H.	.....	.....	.....	0.08
Point Arena L. H.	.....	.....	.....	3.12
Point Bonita L. H	.....	.....	.....	2.75
Pt. Conception L.H.	.....	.....	.....	0.00
Point Fermin L. H.	.....	.....	.....	0.40
Pt. Hueneme L. H.	.....	.....	.....	1.00
Point Montara L. H	.....	.....	.....	0.90
Point Pinos L. H	.....	.....	.....	0.00
Point Reyes L. H.	.....	.....	.....	0.53
Point Sur L H	.....	.....	.....	0.44
Pomona *	108	55	75.4	0.00
Portersville *	106	49	75.1	0.01
Presidio of San F.	85	48	60.4	0.80
Puente *	105	57	77.4	0.00
Ravenna *	104	49	71.8	0.00
Riverside (1) †	106	45	70.0	0.13
Riverside (2)	104	41	73.3	.....
Roe Island L. H.	.....	.....	.....	0.52
Rocklin *	105	54	74.1	0.00
Rumsey *	103	56	75.6	0.85
Sacramento (1)	90	44	62.5	0.07
Sacramento (2) *	93	51	70.4	0.00
Sacramento (3) *	92	54	63.3	0.00
Salinas (1) *	84[f]	44[f]	60.5[h]	0.12
Salinas (2) *	70	46	57.9	0.12
Salton *	113	62	86.7	0.00
Sanger Junction*	109	50	73.4	0.10
San Ardo*	102	48	68.0	0.14
San Bernardino †	100	43	70.8	0.00
San Diego B'ks	91	53	71.4	0.11
San Gabriel *	105	56	74.4	0.00
San José *	89	49	65.4	0.37
San Luis L. H.	.....	.....	.....	0.15
San Mateo *	84	52*	66.1	0.65
San Miguel*	102	50	63.4	0.35
San Pedro*	100	58	74.2	0.00
Santa Ana*	104	59	76.6	0.00
Santa Barbara (1)	90	51	69.3	0.15
Santa Barbara (2)	90	53	70.4	0.18
Santa Barbara L. H.	.....	.....	.....	0.23
Santa Clara	.....	.....	.....	0.25
Santa Cruz (1) *	92	47	64.5	0.85
Santa Cruz (2)	92	39	61.8	0.70
Santa Cruz L. H	.....	.....	.....	0.00
Santa Margarita*	97	43	64.3	0.71
Santa Maria	.....	.....	.....	0.03
Santa Monica*	86	56	69.6	0.00
Santa Paula*	90	52	67.0	0.19
Santa Rosa	93	45	64.8	0.20
Selma*	103	53	78.5	0.07
Seven Palms*	114	68	85.3	0.10
Shingle Springs*	96	60	75.6	0.04
Sims*	100	44	57.0	1.50
Soledad*	90	50	65.2	0.01
Sonoma*	93	46	60.7	0.45
Soquel *	86	46	65.3	.....
S. E. Farrallon L. H.	.....	.....	.....	0.50
Spadra *	107	54	72.6	0.10
Steeles	94[c]	48[c]	67.2[c]	0.36
Stockton (1)	.....	.....	.....	0.14
Stockton (2) *	96	58	71.6	0.20
Summit*	78	37	53.0	.....
Suisun City *	96	54	69.5	1.06
Susanville *†	88	37	58.5	0.65
Tehachapi *	92	38	64.0	1.17
Tehama*	105	53	75.2	0.06
Templeton *	103	47	68.9	0.70
Towles *	90	37	63.3	1.08
Tracy *	100	55	72.6	0.27
Traver *	101	55	71.6	0.17
Trinidad L. H	.....	.....	.....	3.33
Tropico *	100	53	72.6	0.00
Truckee (1) *	88	32	53.1	0.98
Tulare *	108	54	76.7	0.77
Turlock *	102	54	72.6	0.25
Upper Lake	99	37	64.1	0.95
Upper Mattole*	98	44	64.6	2.30
Vacaville (1) *	101	56	68.2	0.50
Vacaville (2) *	95	50	62.8	0.35
Valley Springs*	97	50	71.6	0.23
Ventura†	.....	.....	.....	0.98
Vina*	103	52	72.9	0.00
Volcano Springs *	118	62	88.0	0.00
Volta	105	61	75.1	0.08
Walla Walla Creek*	90	36	59.0	1.18
Walnut Creek	98	45	71.0	1.38
Westley *	98	65	80.4	0.21
Wheatland	104	49	71.2	0.02
Whittier*	102	60	77.3	0.00
Williams*	104	57	70.7	0.00
Willow (1)†	100	43	69.1	0.07
Willow (2) *	99	46	74.3	0.04
Winters *	104	60	78.0	0.50
Yerba Buena L. H.	.....	.....	.....	0.09
Abbott	.....	.....	.....	1.07
Agate	.....	.....	.....	0.25
Alamosa †	.....	.....	.....	1.48
Alma h†	70	21	45.4	1.30
Antonito †	80	34	52.4	2.63
Apishapa*†	79	43	63.9	.....
Arboles	.....	.....	.....	0.31
Aroya	.....	.....	.....	0.45
Aspen †	91	30	57.0	2.00
Avocaf	.....	.....	.....	0.50
Beaver Creek	.....	.....	.....	0.33
Bennet	.....	.....	.....	0.80
Box Elder	.....	.....	.....	1.00
Brandon	.....	.....	.....	1.55
Brush	.....	.....	.....	0.84
Burlington† h	99	40	67.4	1.09
Byers	.....	.....	.....	0.12
Cañon City†	94	43	67.6	0.44
Castle Rock†	91	31	61.2	0.73
Cheyenne Wells *†	104	50	67.1	1.92
Chivington †	.....	.....	.....	1.35
Climax * †	61	28	44.4	2.65
Colorado Springs [d	87	33	61.7	.....
Como (near) †	72	29	48.4	1.05
Cope †	.....	.....	.....	0.99
Crook	95	38	65.6	2.10
Cumbres †	72	21[g]	47.0[g]	7.32
Del Norte†	82	31	58.1	2.27
Downing †	.....	.....	.....	1.39
Dumont	.....	.....	.....	1.16
East Dale	.....	.....	.....	2.20
First View	.....	.....	.....	1.68
Fort Collins †	89	34	61.1	1.02
Fort Collins (near)	.....	.....	.....	1.29
Fruita †	95	40	64.4	2.68
Garnett	.....	.....	.....	2.21
Gaynor	.....	.....	.....	1.07
Georgetown†	79	33	56.7	0.95
Glen Eyrie†	81	35	59.0	0.51
Gold Hill	.....	.....	.....	1.41
Granada	.....	.....	.....	4.56
Greenhorn †	86	34	58.1	1.34
Grover†	85	38	61.2	1.17
Husted †	94	29	60.6	0.50
Idaho Springs†	84	32	56.3	0.72
Jefferson*†	70	25	42.4	1.60
Julesburg†	96	38	66.2	0.32
Kirk	.....	.....	.....	0.85
Kit Carson	.....	.....	.....	0.74
La Junta†	.....	.....	.....	1.44
Lamar †	98	39	67.6	2.31
La Porte	.....	.....	.....	1.43
Las Animas†	94	39	66.3	1.21
Lavender	.....	.....	.....	3.68
Le Roy*† f	92	41	63.5	0.67
Leslie	.....	.....	.....	0.77
Livermore h	80	32	55.1	1.18
Longmont †	90	34	61.0	1.12
Magnolia	.....	.....	.....	T.
Manhattan	.....	.....	.....	1.94
Meeker †	88	30	58.8	2.04
Middle Box Elder	.....	.....	.....	1.25
Minneapolis †	.....	.....	.....	4.17
Monte Vista (1)	82	30	55.5	2.19
Monte Vista (near)	.....	.....	.....	2.03
Montrose (near)	.....	.....	.....	1.18
Moraine †	79	25	53.2	1.45
Pagoda (near) †	88	28	56.8	2.46
Parachute †	90	43	64.6	2.50
Paradox	.....	.....	.....	2.73
Platoro j †	71	22	43.7	5.98
Red Cliff	.....	.....	.....	2.07
Rico	.....	.....	.....	4.28
Robb†	94	38	60.0	1.59
Rocky Ford†	95	34	67.6	1.72
Saint Cloud	.....	.....	.....	1.50
San Acacia	.....	.....	.....	1.70
Sanborn	.....	.....	.....	1.13
San Luis †	86	30	57.4	2.65
Sedgwick	.....	.....	.....	0.69
Sheridan Lake* †	93	43	67.0	1.91
Smoky Hill Mine †	88	32	58.8	1.20
Springfield †	.....	.....	.....	2.69
Stamford	.....	.....	.....	0.64
Steamboat Springs†	87	35	58.2	1.88
Surface Creek †	85	37	60.7	1.67
Table Rock	82	32	63.9	0.66
T. S. Ranch †	88	40	61.8	2.89
Thon †	97	32	63.6	0.57
Twin Lakes	.....	.....	.....	1.61
Vilas	.....	.....	.....	3.01
Villa Grove† i	100	26	60.4	2.59
Ward District	.....	.....	.....	0.92
Watervale	.....	.....	.....	3.02
Watkins	.....	.....	.....	0.22
Windsor	.....	.....	.....	0.77
Wray	.....	.....	.....	1.24
Yuma †	.....	.....	.....	0.64
Connecticut.				
Canton	88	41	66.2	1.46
Colchester	88	43	65.8	.....
Falls Village	.....	.....	.....	0.94
Fort Trumbull	89	47	68.6	2.69
Hartford (2)	.....	.....	.....	4.46
Lake Konomoc	.....	.....	.....	2.83

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Connecticut—Cont'd.	°	°	°	*Ins.*
Lebanon	.....	.....	.....	5.36
Mansfield	85	43	63.7	4.08
Middletown	86	44	64.8	3.46
New Hartford (1)†	86	42	62.0	1.35
Newington	.....	.....	.....	4.64
N. Grosvenor Dale	82	48	68.3	2.22
North Woodstock	.....	.....	.....	3.66
Southington	85	43	64.5	3.70
South Manchester	.....	.....	.....	3.47
Stevenson	.....	.....	.....	1.68
Thompson	83	45	64.6	.....
Voluntown†	85	43	64.3	4.10
Wallingford†	.....	.....	.....	3.84
Waterbury	90	34	66.0	1.68
West Simsbury	.....	.....	.....	1.46
Delaware.				
Dover†	87	50	68.6	1.00
Kirkwood	92	.....	70.2	.....
District of Columbia.				
Dist'ng Resvoir*	85	52	69.8	4.70
Long Bridge†	.....	.....	.....	0.15
Rec'ng Reservoir*	83	52	69.3	6.08
Washington B'ks	89	51	71.0	1.45
West Washington*	93	48	72.6	4.20
Florida.				
Amelia†	.....	.....	.....	6.46
Archer†	94	59	79.1	5.62
De Land (1)†	92	60	78.2	8.51
De Land (2)	90	61	77.4	.....
Eustis†	92	63	76.5	8.22
Fort Barrancas	97	54m	79.6m	2.97
Fort Meade†	88	65	78.2	16.00
Gainesville†	83	60	70.6	3.91
Homeland	90	72	79.4	17.10
Hypoinxo*†	91	72	79.7	8.72
Manatee†	92	69	79.9	5.40
Merritts Island†	90	72	80.0	10.70
Miami†	89	.....	.....	8.86
Orange City†	94	62	78.8	8.55
Passadena†	92	64	77.4	7.73
St. Francis B'ks	87	66	77.8	10.68
St. Petersburg†	90	71	78.7	6.18
Tallahassee†	88	61	76.1	0.95
Tarpon Springs†	92	67	79.1	3.66
Georgia.				
Albany†	91	60	76.5	1.44
Allapaha†	90	57	75.6	0.84
Americus†	94	56	76.5	0.38
Athens (1)	88	60	72.9	0.94
Athens (2)†	90	54	72.3	1.06
Bainbridge†	90	62	77.0	1.87
Blakely*†	90	65	78.3	0.67
Camak†	89	57	73.4	1.46
Canton†	.....	.....	.....	2.08
Cartersville†	90	51	72.4	3.27
Columbus†	84	59	73.6	1.11
Cordele†	96	56	75.9	1.09
Eastman†	90	58	74.4	0.98
Elberton†	90	55	72.1	1.82
Forsyth	95	60	77.2	1.35
Fort Gaines†	91	51	70.6	0.57
Gainesville†	88	52	70.6	1.16
Gillsville*†	89	61	74.2	1.12
Griffin†	88	54	73.2	0.71
Hephzibah†	88	64	73.8	1.50
Macon†	90	56	72.5	1.24
Marietta*†	89	51	69.5	2.52
Milledgeville†	88	60	74.4	0.97
Millen†	94	56	75.4	0.98
Monticello†	.....	.....	73.2	0.84
Newnan†	88	52	71.7	2.12
Point Peter	.....	56	68.4	1.10
Poulan†	94	57	74.5	1.13
Quitman (1)	.....	.....	.....	2.40
Quitman (2)†	90	60	77.0	2.01
Resaca†	.....	.....	.....	2.84
Rome†	.....	.....	.....	3.80
Thomasville (2)†	94	60	77.6	2.47
Toccoa†	90	54	71.0	3.24
Union Point†	93	58	74.0	0.95
Washington†	88	57	73.4	0.38
Way Cross†	88	60	75.3	0.82
Waynesborough†	92	61	74.9	2.21
West Point†	90	60	76.2	1.61
Idaho.				
American Falls†	91	23	56.4	0.44
Boise Barracks	94	30	62.7	0.05
Era†	87	23	54.6	0.70
Fort Sherman	88	31	58.6	0.71
Henrys Lake†	84	18	48.8	1.55
Kootenai†	88	30	54.7	1.26
Mullan*†	85	31	53.8	2.66
Ruthberg*†	96	50	66.4	0.21
Illinois.				
Alton†	.....	.....	.....	0.87
Aurora (1)†	92	40	66.4	0.66
Aurora (2)	96	44	67.8	0.76
Beardstown†	.....	.....	.....	1.51
Beason*	93	40	67.1	0.15
Carlinville*	100	48	71.4	0.62
Centralia*	94	46	71.0	1.00
Charleston	95	43	69.7	1.43
Chester†	.....	.....	.....	0.76
Collinsville†	94	46	71.5	1.71
East Peoria*	91	52	69.6	1.32

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Illinois—Cont'd.	°	°	°	*Ins.*
Flora	92	42	69.5	1.50
Fort Sheridan	94	43	66.8	0.48
Golconda*	92	54	73.2	0.38
Greenville	100	42	70.7	0.41
Griggsville†	100	44	72.8	1.53
Hennepin†	97	37	67.6	0.98
Irishtown	.....	.....	.....	0.87
Jordans Grove*	96	43	71.8	0.66
Lacon*†	92	44	69.0	1.39
Lanark*	92	42	66.0	1.84
Martinsville*	92	48	72.0	1.12
Mascoutah	98	48	73.2	1.90
Mattoon*	93	48	72.6	1.25
McLeansborough*	95	46	69.9	0.78
Mount Carmel†	.....	.....	.....	1.22
New Haven†	.....	.....	.....	0.94
Olney (1)*	95	50	71.8	1.33
Olney (2)*	94	51	68.6	1.53
Oswego*	92	38	65.4	1.20
Ottawa†	93	43	65.7	1.27
Palestine†	93	44	67.2	1.33
Pana*	94	50	71.8	1.00
Peoria (1)†	.....	.....	.....	1.92
Peoria (2)	93	46	70.4	2.00
Philo†	97	39	70.2	0.59
Pontiac*	100	44	.....	0.20
Riley†	93	44	68.4	0.87
Rockford	93	39	67.8	0.75
Rock Island Ara'l	91	40	68.9	1.48
Rushville	98	44	67.0	0.61
Sandwich†	91	43	67.6	1.62
Sycamore*	89	38	66.3	0.37
Warsaw†	.....	.....	.....	0.01
White Hall*	92	46	71.4	2.02
Winnebago*†	94	42	67.9	0.99
Indiana.				
Angola	92	45	66.4	2.99
Butlerville	90	55	68.2	2.77
Columbia City	90	44	67.9	1.95
Columbus	90	50	66.8	2.14
Connersville†	89	43	66.7	1.66
De Gonia Springs	90	50	69.8	1.55
Delphi	91	38	66.6	1.39
Evansville†	.....	.....	.....	1.23
Farmland	91	46	68.1	2.45
Franklin	90	49	67.4	0.73
Huntingburgh	98	48	74.9	5.65
Huntington†	.....	.....	.....	3.38
Jeffersonville	89	47	68.8	1.67
La Fayette†	96	42	69.7	1.70
Logansport (1)†	.....	.....	.....	1.61
Logansport (2)	91	41	68.8	1.31
Marion†	90	36	65.2	1.18
Mauzy	92	39	67.8	1.85
Michigan City	94	40	69.7	1.13
Mount Vernon (1)†	.....	.....	.....	1.48
Mount Vernon (2)	.....	.....	.....	1.51
Muncie†	93	56	71.6	3.49
Point Isabel†	98	42	70.4	3.11
Princeton*†	93	54	69.7	1.85
Rockville	96	44	70.3	1.71
Seymour†	93	48	70.7	2.79
Shelbyville*†	90	53	71.3	1.92
Terre Haute†	.....	.....	.....	1.46
Valparaiso†	91	48	69.4	0.34
Vevay	91	45	68.6	1.64
Vincennes†	.....	.....	.....	1.51
Worthington†	88	46	68.1	1.32
Indian Territory.				
Eufaula†	.....	.....	.....	0.25
Fort Supply	96	41	71.1	1.52
Healdton†	90	46	74.4	0.60
South McAlester†	96	.....	.....	0.50
Tulsa†	.....	.....	.....	0.65
Woodward†	.....	.....	.....	0.07
Iowa.				
Alta (1)†	88	37	66.0	2.04
Alta (2)	90	38	67.8	2.04
Amana†	88	37	66.1	2.20
Ames (1)*	93	38	67.7	1.05
Atlantic†	90	29	65.9	1.94
Bancroft†	89	33	65.8	2.26
Belle Plaine	94	34	68.5	1.28
Blakeville*	100	47	69.3	1.60
Bonaparte*	94	52	73.9	0.90
Carroll	87	35	65.9	1.93
Cedar Falls†	91	35	66.0	2.30
Cedar Rapids†	90	41	67.6	1.81
Charles City†	97	37	66.5	1.10
Clarinda†	90	40	69.2	0.20
Clinton	92	40	66.3	0.68
College Springs*	96	46	68.4	0.41
Cordova	.....	.....	.....	1.06
Corning (1)	.....	.....	.....	0.31
Corning (2)†	88	35	67.5	0.40
Corydon†	90	39	67.7	0.15
Cresco†	91	36	64.6	0.99
Delaware*	93	39	64.0	1.01
Denison†	97	36	68.7	1.31
Eagle Grove*	.....	35	65.5	3.60
Elkader†	92	33	65.8	0.94
Fairfield†	89	43	68.4	0.51
Fayette†	92	32	65.8	1.35
Fontanelle	.....	.....	.....	1.13
Fort Madison*†	100	49	73.9	1.19

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Iowa—Cont'd.	°	°	°	*Ins.*
Galva†	90	33	64.2	1.41
Glenwood (1)†	104	40	72.8	1.65
Grand Meadow*	90	42	65.4	1.42
Greenfield	90	36	67.5	0.92
Greenville†	89	28	66.9	1.52
Grinnell†	88	38	65.0	1.28
Grundy Centre*	90	42	66.8	1.82
Hampton	89	37	64.6	3.34
Hopeville†	90	39	67.0	0.13
Hopkinton*	90	42	67.9	0.90
Independence*†	86	47	66.1	1.23
Iowa City†	92	40	66.3	2.33
Keosauqua†	95	41	70.0	0.35
Larrabee*†	94	32	65.3	1.82
Le Claire†	.....	.....	.....	1.27
Logan†	91	35	69.8	1.74
Ludlow*	90	40	65.4	1.33
Mason City†	92	31	62.8	2.51
Maxon*	91	44	69.3	0.51
Maquoketa*	93	44	66.5	1.11
Marshalltown†	90	30	66.4	0.96
McCausland*	87	41	64.7	1.47
Monticello†	90	39	65.5	0.64
Mount Pleasant (1)	88	.....	68.4	0.53
Mount Pleasant (2)	.....	.....	.....	0.80
Murray†	90	40	67.8	0.26
Muscatine (2)*	90	40	66.0	1.35
Osage*†	.....	38	61.4	1.68
Oskaloosa (1)†	92	37	68.0	0.24
Panama†	89	35	67.2	2.81
Richland*	.....	46	65.4	0.49
Sac City†	92	34	62.9	2.25
Sanborn*	96	46	65.6	1.55
Stilson†	90	33	66.3	2.60
Storm Lake†	88	39	67.5	1.70
Tipton†	90	41	68.3	1.28
Vinton*	89	37	65.2	2.00
Washington	94	46	72.4	0.40
Webster City*	95	36	66.2	1.74
Williams*	92	32	63.0	2.14
Windsor	.....	.....	.....	1.22
Winterset†	87	42	68.0	0.66
Kansas.				
Abilene†	93	37	71.0	2.47
Allison*†	88	40	64.9	3.55
Altoona*†	94	36	71.0	0.87
Bucklin	.....	.....	.....	5.45
Buffalo Park	98	.....	.....	3.75
Burr Oak	92	40	.....	5.38
Cawker City	96	42	69.8	5.40
Coldwater†	98	42	71.2	1.90
Collyer	100	44	.....	3.20
Columbus†	107	39	75.3	0.41
Concordia	92	37	68.0	3.53
Cunningham*†	93	37	69.2	1.99
Downs	.....	.....	.....	5.87
Dwight	.....	.....	.....	1.70
Elco	95	40	71.4	0.70
Elk Falls†	96	36	75.4	0.79
Ellis*	96	52	74.8	9.00
Emporia†	90	45	69.7	0.86
Englewood*	95	44	69.9	3.72
Eureka Ranch†	98	37	69.8	4.73
Ft. Leavenworth (1)	91	40	70.5	1.07
Ft. Leavenworth (2)	91	43	70.4	0.88
Fort Riley	96	39	72.3	2.30
Fort Scott	.....	.....	.....	1.50
Fremont†	102	38	70.1	5.49
Globe*	90	44	67.2	1.64
Gove City*†	100	48	68.9	2.95
Grainfield	96	.....	.....	4.20
Grenola	97	47	72.8	1.40
Grinnell	98	.....	.....	3.12
Halstead	88	34	69.3	0.98
Havensville*†	93	36	70.0	1.77
Horton†	93	42	69.8	0.97
Hutchinson†	93	40	71.3	2.86
Independence†	98	45	74.2	1.32
Kansas City	95	38	69.8	0.36
Kellogg	96	37	73.4	1.76
Kirwin†	.....	.....	.....	2.60
La Crosse†	98	47	71.6	2.12
La Harpe	.....	.....	69.6	0.15
Lakin†	.....	.....	.....	4.00
Larned†	105	41	65.6	1.15
Lebo†	98	31	71.0	1.21
Leoti†	97	33	65.8	2.13
Mackaville*†	100	38	69.6	2.00
Manhattan (1)†	.....	.....	.....	1.40
Manhattan (2)	97	31	70.0	1.46
Manhattan (3)	96	33	70.6	1.40
Mankato†	93	40	67.0	3.62
McAllaster	90	.....	70.5	2.10
McPherson†	.....	.....	.....	2.56
Medicine Lodge	.....	.....	.....	1.77
Minneapolis	90	38	69.1	4.65
Monument	98	.....	.....	1.75
Morse†	94	40	69.4	1.23
Morton	100	40	75.6	8.60
New Engl'd Ranch†	102	35	69.3	2.60
Oakley	98	.....	.....	.....
Oberlin†	.....	.....	.....	1.40
Ogallah	95	.....	.....	6.00
Oswego†	101	41	74.4	0.87
Page City	93	.....	.....	2.25

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Kansas—Cont'd.	°	°	°	*Ins.*
Pauline	95	37	71.6	0.50
Phillipsburgh†	98	40	68.0	3.49
Pleasant Dale	94	37	64.7	2.26
Rome	93	41	72.1	1.06
Salina†	89	45	70.8	3.75
Sedan†	95	46	73.6	0.97
Seneca†	95	31	68.1	0.59
Shields†	99	39	72.1	3.14
Stafford*†	89	45	66.5	4.80
Sterling†	93	42	72.2	2.39
Tribune	93j	34k	63.0	2.31
Ulysses	.....	.....	.....	3.98
Wakefield	96	42	72.2	3.72
Wa Keeney	94	.....	.....	4.00
Wallace (1)†	.....	.....	.....	1.80
Wallace (2)	102	.....	.....	.....
Weskan (1)	95	47	68.5	1.40
Yates Centre†	98	35	72.0	0.69
Kentucky.				
Bowling Green†	93	52d	73.1	2.41
Burkesville†	.....	.....	.....	1.00
Burnside†	.....	.....	.....	1.34
Caddo*†	92	57	70.9	3.00
Catlettsburgh†	.....	.....	.....	1.23
Canton*†	95	53	69.3	3.30
Central City†	.....	.....	.....	1.23
Earlington	95	51	72.3	1.44
Edmonton†	87	49	67.8	1.41
Falmouth (1)†	.....	.....	.....	2.34
Fort Thomas	93	42	69.1	1.74
Frankfort (1)†	.....	.....	.....	2.12
Frankfort (2)	94	45	67.2	2.12
Franklin*†	97	57	72.0	2.54
Greensburgh†	.....	.....	.....	2.30
Harrodsburgh†	96	42	67.5	1.45
Louisa†	.....	.....	.....	1.67
Middlesborough†	88	49	65.6	1.52
Newport Barracks	94	45	68.8	2.71
Paducah†	.....	.....	.....	0.49
Pellville†	93d	48d	67.8d	3.03
Princeton†	90	46	70.4	1.65
Richmond†	96	54	73.2	0.43
Shelbyville†	94	44	67.8	2.90
South Fork†	.....	.....	65.4	.....
Springfield†	98	42	69.6	1.95
Williamsburgh†	.....	.....	.....	0.80
Louisiana.				
Abbeville	93	57	78.2	0.76
Alexandria†	92	46	78.2	0.74
Amité City†	94	51	75.2	3.58
Baton Rouge	94	54	77.3	0.65
Cameron†	99	57	78.0	2.85
Cheneyville†	94	50	75.8	0.68
Clinton d	93	65	80.2	0.92
Coushatta (1)†	.....	.....	.....	3.12
Coushatta (2)†	96	50	76.4	3.03
Davis	98	45	72.6	1.00
Delhi†	.....	.....	.....	1.00
Edgard	90	63	77.2	5.60
Emilie	92	57	75.4	6.40
Girard†	.....	.....	.....	0.17
Grand Coteau n	89	65	77.4	0.75
Homer†	92	54	75.4	2.14
Houma†	94	56	76.6	3.26
Jackson Barracks	93	54	76.0	3.01
Jeanerette	96	60	78.2	2.23
La Fayette†	94	51	77.0	1.27
Lake Charles	89	56	73.4	5.40
Lawrence†	90d	63d	78.0d	4.10
Liberty Hill	100	47	76.6	1.33
Luling	90	47	76.0	11.17
Mandeville (4)	91	55	71.2	1.65
Marksville†	94	54	76.2	2.30
Maurepas	89	51	74.2	2.19
Melville†	93	53	76.2	0.59
Minden†	95	50	76.6	0.15
Monroe†	92	55	76.0	2.75
New Iberia	91	57	76.4	2.44
N. La. Ex. Station	91	47	73.7	4.20
Paincourtville d	91	56	76.0	2.55
Plaquemine	95	55	76.2	2.63
Shell Beach	91	57	76.6	2.85
Sugar Ex. Station†	95	54	76.8	9.79
Thibodeaux	.....	.....	.....	1.96
West End	.....	.....	.....	2.20
Winnsborough	98	42	74.2	T.
Maine.				
Bar Harbor	84	45	62.0	2.15
Belfast	81	50	60.7	1.55
Bethel	85	32	.....	1.16
Calais	80	40	60.2	3.53
Cornish	83	43	63.4	2.42
East Machias†	78	39	58.7	2.63
Fairfield	85	36	60.3	2.00
Farmington†	92	28	62.4	1.45
Fort Preble	90	43	62.4	2.45
Kennebec Arsenal	86	40	60.4	0.38
Kents Hill	84	41	.....	.....
Lewiston	86	40	62.1	1.00
Mayfield	79	41	58.4	1.58
Orono†	86	40	60.8	3.68
Petit Menan	69	43	57.8	.....
West Jonesport	74	44	56.3	.....
Maryland.				
Barren Creek Sp'gs†	88	49	69.0	0.53

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Maryland—Cont'd.	°	°	°	*Ins.*
Cumberland (1)†	85	46	67.1	2.46
Fort McHenry	89	51	69.3	4.68
Frederick	90	49	70.6	2.17
Gaithersburgh*	85	.....	71.1	.....
Great Falls*	85	52	69.6	6.07
Leonardtown *†	89	53	71.2	0.74
New Market	85	46	66.6	2.38
Taneytown †	.....	.....	.....	1.91
Woodstock	87	45	67.3	3.45
Massachusetts.				
Adams	85	41	64.8	.....
Amherst	86	38	63.6	2.25
Amherst Ex Sta (1)	89	37	63.6	2.22
Amherst Ex Sta (2)	92	36	65.3	2.66
Andover	88	45	62.8	1.86
Ashland	.....	.....	.....	2.44
Blue Hill (sum't)	86	45	64.3	3.82
Blue Hill (base)	87	44	64.8	3.55
Blue Hill (valley)	89	44	64.9	3.14
Boston	.....	.....	.....	1.58
Cambridge (1)	84	46	64.6	2.48
Cambridge (2)	86	47	66.2	2.73
Chestnut Hill	90	47	67.2	3.07
Chicopee	.....	.....	.....	1.19
Clinton	.....	.....	.....	2.10
Concord †	89	40	64.2	1.69
Cotuit	80	49	65.0	5.57
Deerfield	90	43	65.2	.....
Dudley	86	40	65.1	2.45
Egg Rock, Nahant	82	49	63.6	.....
Fall River (1)*	85	50	66.0	2.38
Fiskdale	.....	.....	....	2.83
Fitchburg (1)	86	48	63.6	1.87
Fitchburg (2)	88	42	65.0	1.88
Florida (1)†	83	.....	59.8	2.46
Florida (2)	80	38	61.2	1.69
Fort Warren	83	50	65.6	2.78
Framingham	88	44	65.5	2.35
Gilbertville	87	37	66.3	1.31
Groton (1)	86	45	65.0	2.05
Heath*	86	40	64.3	.....
Hoosac Tunnel	86	42	67.2	0.95
Kendall Green	85	44	65.4	1.80
Lake Cochituate	91	36	.....	2.12
Lawrence	88	45	66.4	1.47
Leicester	80	42	64.1	2.27
Leominster	.....	.....	.....	2.08
Long Plain	86	44	66.4	2.10
Lowell (1)	86	44	66.2	1.78
Lowell (2)	86	40	64.3	.....
Lowell (3)	92	41	66.6	.....
Ludlow (1)	88	36	63.3	1.77
Lynn	80	43	61.3	2.43
Mansfield	88	44	63.7	3.20
Medford	.....	.....	.....	3.06
Middleborough	88	39	64.0	1.97
Milton	86	40	62.8	3.14
Monson	88	38	64.4	3.40
Mount Nonotuck	.....	.....	.....	2.33
Mystic Lake	.....	.....	.....	2.31
Mystic Station	.....	.....	.....	2.67
Nahant	82	50	62.6	.....
New Bedford (1)	80	46	64.0	2.32
New Bedford (2)	86	44	65.4	1.97
Newburyport (1)	88	46	64.1	1.66
Newburyport (2)	.....	.....	.....	1.59
Northampton	87	45	68.3	2.82
North Billerica	89	44	66.4	2.10
Plymouth	.....	.....	.....	2.23
Princeton	85	42	63.6	2.43
Provincetown	77	50	65.9	2.77
Randolph	.....	.....	.....	2.40
Roberts Dam	.....	.....	.....	2.93
Royalston*	82	46	64.1	2.25
Salem (2)	.....	.....	.....	2.31
Savoy	84	33	58.3	0.96
Somerset †	89	46	68.7	2.66
South Hingham	.....	38	.....	2.27
Springfield Armr'y	89	44	66.8	1.41
Swampscott (2)	88	46	63.7	.....
Taunton (1)	91	44	65.3	2.40
Taunton (2)	87	44	65.0	2.27
Taunton (3)	90	38	65.0	2.51
Taunton (4)	92	42	64.8	2.39
Wakefield	88	41	68.2	1.66
Waltham	.....	.....	.....	2.53
Westborough	92	41	67.6	2.62
Williamstown	86	41	64.0	0.74
Winchester	.....	.....	.....	2.01
Michigan.				
Adrian	94	38	66.8	1.70
Albion (1)	86	41	65.9	1.66
Allegan	93	39	67.7	1.47
Alma	92	36	64.0	2.92
Ann Arbor	88	44	65.6	1.60
Arbela	.....	.....	.....	0.94
Atlantic	77	39	55.3	2.23
Ball Mountain	85	43	63.4	2.37
Bangor	92	38	67.1	1.17
Bear Lake	88	35	62.3	0.99
Bellaire	91	35	62.8	0.96
Bell Branch	82	48	66.6	0.92
Benton Harbor	91	45	69.1	1.13
Benzonia	89	38	62.3	2.58
Berlin	94	39	66.2	2.67
Berrien Springs (2)	.....	.....	.....	1.75
Birch Run	88	36	63.6	1.13
Birmingham	88	38	64.8	2.78
Bronson	88	36	61.1	2.27
Calumet	88	40	60.9	2.91
Caldwell	101	36	62.2	2.35
Charlevoix	89	43	65.2	3.00
Cheboygan	88	27	60.1	1.27
Clinton	91	39	65.0	1.42
Colon	90	48	63.2	1.39
Concord	88	39	65.4	1.67
Corunna	90	36	64.0	1.51
Crystal Falls	90	30	61.7	1.42
Deerfield	96	42	68.7	1.35
Eden	89	42	66.3	1.91
Evart	89	28	57.7	1.06
Fairview	89	39	66.0	1.55
Fitchburgh	89	35	63.7	1.96
Flint	90	36	64.3	1.39
Fort Brady	88	32	59.9	0.89
Fort Mackinac	80	37	59.8	0.73
Fort Wayne	95	40	66.0	1.27
Fremont*	90	38	64.3	0.96
Gaylord	88	24	59.1	0.50
Grape	92	43	67.8	0.73
Grayling	91	26	58.8	3.20
Hanover	88	40	65.8	2.36
Harbor Springs	87	33	60.9	1.34
Harrisville	89	35	61.2	2.17
Hart	86	44	63.6	1.55
Hayes	85	41	63.6	2.91
Highland Station*	90	45	65.2	3.12
Hillsdale	90	44	66.9	1.47
Howell	91	35	64.7	2.02
Hudson	88	32	59.6	1.69
Ivan	92	35	61.9	2.63
Jackson	85	35	62.6	.....
Jeddo	88	42	63.7	3.01
Kalamazoo	90	43	67.8	1.40
Lansing	90	36	65.4	1.37
Lathrop	89	35	62.0	1.33
Madison	90	40	65.8	1.60
Marshall	91	39	65.1	1.67
May	89	40	65.4	1.67
Montague	83	41	63.3	0.44
Mottville	95	38	66.3	1.42
Noble	80	40	64.2	3.10
North Marshall	87	38	64.6	1.60
Olivet	87	38	63.6	0.55
Otsego	93	38	66.1	2.92
Ovid	87	38	63.3	1.22
Parkville	.....	.....	.....	1.50
Paw Paw	93	38	66.7	2.13
Pontiac	84	47	65.2	2.83
Pulaski	86	48	62.8	1.82
Rawsonville	94	44	67.9	1.80
Rockland	92	36	63.3	.....
Saint Ignace	84	35	59.4	0.76
Saint Johns	90	42	66.2	0.90
Sand Beach	87	41	61.6	1.92
Thornville	89	43	65.3	3.96
Vandalia	88	42	67.3	1.05
Vienna	.....	.....	.....	1.55
Washington	91	38	65.4	2.41
Weldon Creek	91	34	62.3	2.49
White Pigeon	93	38	66.4	1.76
Williamston	90	42	68.3	2.25
Ypsilanti	87	36	61.0	2.34
Minnesota.				
Alexandria†	.....	.....	.....	2.47
Alma City †	92	35	65.3	1.13
Crookston †	93	32	59.9	4.09
Farmington*	92	40	67.1	0.81
Fergus Falls†	.....	.....	.....	2.79
Fort Ripley †	.....	.....	.....	3.92
Fort Snelling	94	36	66.4	0.60
Grand Meadow*	92	38	62.8	1.84
Kinbrae	94	36	65.8	1.51
L. Winnibigoshish*	84	43	60.5	4.34
Leech Lake*	85	34	60.6	3.43
Le Sueur*	93 d	38 d	67.5d	1.26
Mankato	87	40	66.6	0.91
Minneapolis*	91	43	65.8	1.92
Montevideo†	101	33	68.4	0.79
Morris	96	31	64.7	3.07
Northfield †	93	39	65.7	1.41
Ortonville †	.....	.....	.....	1.34
Pine River*	87	40	62.8	2.85
Red Wing	90	41	66.3	1.23
Redwood Falls†	.....	.....	.....	0.41
Saint Charles* †	92	41	61.6	1.38
Sheldon	.....	.....	63.0	1.20
Mississippi.				
Aberdeen†	94	44	70.1	0.68
Agricultural Col'ge	94	53	76.1	0.70
Batesville †	94	44	73.0	1.44
Bay Saint Louis †	89	68	78.6	7.90
Booneville†	97	50	74.5	1.98
Brookhaven†	98	48	76.4	0.29
Canton †	93	52	75.5	0.22
Columbus (1)†	.....	.....	.....	1.50
Columbus (2)†	99	52	76.4	0.77
Corinth †	93	49	72.0	1.26
Edwards†	96	49	76.9	1.33
Enterprise†	94	50	73.8	0.99
Fayette†	95	52	76.5	0.25
Greenville	89	53	75.0	1.54
Hattiesburgh †	96	56	77.8	1.60
Hazlehurst†	96	50	76.1	0.85
Hernando†	96	46	74.8	0.81
Holly Springs (1)	93	52	74.6	1.00
Holly Springs (2)†	92	48	73.2	0.89
Jackson†	96	48	76.5	T.
Kosciusko †	95	48	74.2	0.00
Lake †	94	48	73.2	0.00
Logtown †	91	56	76.0	3.80
Louisville †	104	44	75.5	0.53
Macon†	96	50	75.1	0.37
Natchez†	94	53	76.9	0.65
Okolona†	97	46	73.8	0.00
Palo Alto†	93	52	73.6	0.46
Pontotoc †	94	47	71.2	0.15
Port Gibson†	97	44	75.2	0.39
Rienzi *	94	58	74.6	3.27
Ship Island †	90	64	78.5	2.18
Vaiden†	103	44	73.2	0.32
Washington g†	96	56	77.0	0.31
Water Valley*	99	42	72.9	1.72
Waynesboro' (1) †	90	52	74.0	0.50
Waynesboro' (2)†	94	52	75.4	0.75
Yazoo City †	.....	.....	.....	0.35
Missouri.				
Adrian †	95	30?	65.6	1.02
Appleton City†	92	44	70.0	1.85
Austin *	95	46	73.6	0.25
Boonville †	.....	.....	.....	1.18
Brunswick	92	45	70.7	0.10
Carrollton †	90	46	70.3	0.55
Carthage *†	94	46	70.0	0.82
Chillicothe (1)	87?	58?	72.8	0.08
Chillicothe (2)	92	46	60.2?	0.61
Conception	88	44	69.7	0.42
Concordia	94	.....	.....	0.49
Dadeville †	93	49	74.0	0.93
Dunnegan	.....	.....	.....	1.75
East Lynn *	93	44	73.0	0.52
Eight Mile *	92	42	69.4	0.60
Eldon *	96	50	73.2	0.67
Excelsior Springs*	91	35	68.2	0.05
Fayette	98	41	71.2	0.42
Fox Creek *	92	46	71.0	0.60
Glasgow	93	39	70.1	0.39
Gordonville *†	92	46	70.8	0.64
Harris *†	91 d	40 d	66.1d	0.57
Harrisonville †	90	.....	63.8	0.86
Hermann *†	90	50	70.8	0.36
Jefferson Barracks	99	43	71.3	0.45
Jefferson City†	92	46	71.2	0.96
Jerome †	.....	.....	.....	0.54
Kansas City	94	39	71.2	0.33
Kidder g	92	55	73.8	0.08
Lamonte (2)†	.....	.....	.....	0.54
Lebanon *	90	52	72.9	0.55
Liberty	92	37	69.8	0.40
Louisiana Bridge †	.....	.....	.....	1.15
Marshall (2) †	92	43	70.6	0.30
Mine La Motte	92	42	70.0	0.65
New Haven *	96	50	71.8	1.10
Oak Ridge *	104 d	51	69.9	0.20
Oregon (1)	90	39	70.3	0.67
Oregon (2)	90	42	69.4	0.61
Pickering *	.....	37	61.2	0.83
Platte River *	90	34	70.7	0.34
Princeton *	92	43	70.8	T.
Saint Charles (2)	94	44	71.8	1.04
Saint Joseph†	.....	.....	.....	0.50
Saint Louis	94	42	69.0	1.25
Sarcoxie	94	37	70.0	0.80
Sedalia	93	45	69.6	0.68
Shelbina	.....	.....	.....	0.60
Stellada†	95	42	70.9	1.06
Warrensburgh *	90	50	71.0	0.64
Warrenton	93	50	.....	0.60
Withers Mills	.....	.....	.....	1.00
Zeitonia	.....	.....	.....	0.71
Montana.				
Boulder Valley †	81	25	52.7	0.56
Camp Poplar River	97	30	60.4	0.35
Choteau†	88	24	55.8	0.15
Fort Assiniboine	86	30	58.4	0.87
Fort Custer	92	38	63.2	1.30
Fort Keogh	98	34	63.4	0.70
Fort Missoula	87	28	55.4	1.39
Glendive †	94	38	64.2	0.07
Martinsdale†	79	28	54.9	1.85
Virginia City†	81	23	53.4	1.37
Nebraska.				
Ansley †	94	30	66.0	0.80
Arborville	.....	.....	.....	2.06
Ashland*	91	34	68.8	1.32
Auburn (1)* †	96	35	73.7	0.96
Beatrice †	92	36	68.9	1.31
Beaver City*	100	42	71.1	2.32
Brandon	.....	.....	.....	0.95
Burwell*	90	40	64.2	1.43
Creighton †	90	32	64.1	0.00
Crete	92	39	68.4	1.83
Culbertson (1) †	.....	.....	.....	1.36
Culbertson (2)*	96 m	46 m	66.8 m	1.34
David City* †	86	42	64.0	2.00
De Soto	94	37	68.5	1.33
Dunning*	86	48	67.9	1.30
Ericson* †	91	48	67.8	0.60
Ewing * †	95	38	66.7	0.21
Fairbury *	92	.....	.....	1.36
Fairfield *	92	36	67.7	1.18
Fort Niobrara	96	30	63.0	0.49
Fort Omaha	97	38	70.4	1.24
Fort Robinson	95	35	67.6	1.52
Fort Sidney	95	35	64.6	0.56
Franklin*	94	39	66.8	3.33
Fremont*	90	38	68.5	1.37
Geneva	.....	.....	.....	1.70
Genoa †	89	41	67.0	1.13
Gering †	94	38	65.5	2.01
Grand Island m	93	42	71.3	0.46
Grant †	.....	.....	.....	1.00
Hartington †	91	30	66.0	0.65
Hastings†	88	46	.....	2.30
Hay Springs †	94	33	61.4	1.90
Hebron	90	34	68.4	2.25
Holdrege	.....	41	65.8	4.95
Imperial	95	45	66.7	0.75
Kimball †	95	30	63.6	1.30
Lexington* †	97	48	65.4	0.81
Lincoln	91	39	69.7	2.07
Long Pine	110	58	68.0	0.75
Marquette *	92	40	.....	1.22
Minden *	92	46	65.9	4.33
Nebraska City *	91	37	66.2	1.73
Norfolk †	89	36	65.3	0.79
North Loup †	89	31	66.4	0.89
O'Neill	94	42	66.4	0.30
Ough (2)†	.....	.....	.....	0.80
Plattsmouth†	.....	.....	.....	2.30
Precept	92	48	66.2	1.93
Purple Cane *	90	50	73.9	2.03
Ravenna	92	35	66.2	1.54
Sargent†	.....	.....	.....	0.87
Schuyler †	94	.....	.....	0.39
Seward*	92k	48k	70.4k	1.68
Springview	98	34	67.3	0.09
Stockville†	100	30	68.1	0.93
Superior *	105	43	72.7	4.24
Syracuse *	92	44	69.9	1.18
Tecumseh†	93	32	69.6	1.16
Tekamah*	94	45	69.4	1.45
Wallace *	92	40	65.1	0.20
Weeping Water*	94	34	67.0	1.49
West Hill*	87	45	65.7	1.05
Whitman *	90	.....	68.7	0.90
Wilcox	.....	.....	.....	4.20
York	.....	.....	.....	0.67
Nevada.				
Austin	84	27	57.4	0.85
Battle Mountain*	92	38	65.4	0.00
Belmont	82	18	53.9	1.06
Belleville	93	34	60.3	1.59
Beowawe	92	35	64.8	0.63
Browns *	100	40	68.8	0.87
Candelaria	88	30	62.2	1.05
Carlin*	92	24	57.1	0.30
Carson City	91	28	58.4	0.89
Cranes Ranch	.....	.....	.....	0.45
Downeyville	96	33	63.9	0.61
Elko (2)	96	9	55.0	.....
Ely	90	19	50.2	2.03
Eureka	96	5	64.9	1.08
Fenelon *	102	30	64.3	0.00
Genoa	85	34	57.9	0.80
Golconda *	94	34	63.7	1.05
Halleck *	98	28	58.6	0.80
Hawthorne (1)*	93	36	66.4	0.87
Hawthorne (2)	95	30	64.4	0.89
Hot Springs*	95	30	60.0	0.00
Humboldt *	88	34	61.5	0.70
Mill City	97	37	64.2	.....
Monitors Ranch	85	19	55.7	1.34
Palisade *	98	27	64.7	0.30
Palmetto	89	29	57.4	1.09
Reno*	88	45	61.5	0.50
Reno State Univ'sy	92	31	59.1	0.54
Sunnyside	94	16	55.6	1.51
Tecoma *	90	30	61.8	1.70
Virginia City	88	25	60.4	1.68
Wabuska	98	42	62.5	1.48
Wells *	89	36	64.7	0.43
Winnemucca*	90	48	60.2	0.00
New Hampshire.				
Antrim	.....	.....	.....	2.00
Belmont	.....	.....	.....	2.53
Berlin Mills	84	30	58.6	1.85
Concord	85	39	63.5	2.09
East Canterbury	85	35	63.4	1.53
Groveton	84	38	59.3	3.47
Hanover (1)	81	38	61.3	1.54
Hanover (2)	88	36	62.6	0.82
Lake Village	.....	.....	.....	1.58
Littleton	83	33	58.9	2.62
Manchester	87	40	63.9	1.76
Mine Falls	.....	.....	.....	1.74
Nashua	90	37	64.7	1.58
Newton	88	42	63.6	1.05
North Conway	90	36	61.4	0.86
Pennichuck Station	.....	.....	.....	1.35

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
N. Hampshire—Con.	°	°	°	*Ins.*
Plymouth	88	34	58.9	1.23
Stratford	88	35	64.7	1.43
Walpole	81	40	62.4	1.75
West Milan	88	32	60.0	1.71
Wiers Bridge	.....	.....	.....	0.96
Wolfborough	.....	.....	.....	1.18
New Jersey.				
Asbury Park	86	52	68.7	4.45
Bayonne	91	47	69.7	2.38
Belleville	.....	.....	.....	3.16
Belvidere	93	41	67.1	2.24
Beverly†	90	46	67.2	2.62
Billingsport L. H*.	87	52	70.8	2.43
Blairstown	91	41	66.0	2.35
Bridgeton(1)	88	50	70.6	1.74
Bridgeton(2)	90	49	72.1	1.09
Camden	89	51	70.8	2.20
Cape May C. H.†	85	49	69.0	1.83
Deckerton	87	41	66.3	1.54
Dover	90	42	66.5	1.91
Egg Harbor City	90	41	67.0	2.19
Franklinville	86	44	66.0	1.88
Freehold	86	45	67.1	3.85
Gillette	87	42	64.3	3.01
Hanover	84	40	64.9	3.42
Highland Park	90	43	68.2	2.20
Hightstown	.....	.....	.....	2.69
Imlaystown	88	45	68.8	3.37
Junction	.....	.....	.....	1.17
Lambertville	87	46	68.3	2.44
Moorestown	93	47	67.9	3.33
Mount Holly	87	48	68.8	.....
Newark (1)	88	51	68.9	2.53
New Brunswick (1)	95	44	71.0	1.76
New Brunswick (2)	80	45	67.4	1.47
Newton†	83	48	66.9	1.57
Oceanic	90	52	74.3	5.91
Paterson	91	47	69.6	2.30
Rancocas*	89	53	.....	2.18
Readington j*	92	56	70.3	...
Salem h	88	42	67.6	0.72
Somerville	93	43	68.4	2.22
South Orange*	85	48	65.6	2.76
Tenafly	94	39	67.6	2.40
Trenton*	90	50	73.0	2.82
Vineland	88	47	69.3	1.08
West Summit	84	44	65.5	.....
Whiting	93	45	69.1	4.84
New Mexico.				
Albert†	93	45	69.8	2.66
Antelope Springs†	89	40	62.7	1.73
Bernalillo	.....	.....	.....	2.80
Bloomfield†	87	45	70.0	1.58
Chama†	90	30	58.9	5.25
Coolidge†	89	30	61.4	1.05
Dulce†	85	30	56.5	3.94
Eddy	105	52	78.9	0.14
Estalina Springs†	.....	.....	.....	2.16
Folsom†g	92	38	61.6	3.88
Fort Bayard	89	41	66.5	1.49
Fort Stanton	88	38	62.8	1.13
Fort Wingate	87	32	62.6	3.40
Hillsborough†	92	45	69.6	1.56
La Luz	92	40	66.3	0.91
Lordsburgh	96	58	76.5	0.88
Los Lunas†	96	38	67.8	0.90
Monero†	84	27	54.8	4.33
Nogal	.....	.....	.....	2.15
Olio†	90	41	64.8	2.26
Pojuaque	.....	.....	.....	3.16
Red Cañon†	93	44	68.7	0.98
Springer†	.....	.....	.....	2.73
Taos†	.....	.....	.....	3.55
Wallace†	93	40	67.8	2.55
New York.				
Addison	88	38	62.9	0.49
Alfred Centre	85	36	60.6	1.22
Arcade(1)	82	35	60.7	2.36
Avon	.....	.....	.....	1.42
Baldwinsville	89	40	64.8	1.04
Batavia	.....	.....	.....	2.15
Bedford	.....	.....	.....	1.65
Bethlehem Centre	.....	.....	.....	2.07
Binghamton†	88	38	64.1	1.54
Bloods Depot	.....	.....	.....	0.93
Boyds Corners*	88	55	68.2	1.87
Brentwood	84	49	66.0	3.10
Brockport	88	45	64.2	1.30
Brookfield	85	36	60.5	1.86
Canton†	85	38	61.7	1.33
Carmel	88	43	66.5	1.67
Central Park, N. Y.	91	54	71.6	2.49
Chenango Forks	.....	.....	.....	2.47
Cherry Creek	.....	.....	.....	2.13
Constableville†	82	35	59.3	1.75
Cooperstown	84	36	61.6	1.41
Davids Island	89	50	67.6	1.05
De Kalb Junction	.....	.....	.....	2.65
Deposit	.....	.....	.....	1.66
Dunkirk (2)	.....	.....	.....	3.20
Easton	.....	.....	.....	1.07
Eden Centre	86	38	62.9	2.15
Elmira†	87	44	66.6	3.25
Factoryville†	90	35	64.3	2.36
Fleming	88	43	65.1	2.05

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
New York—Cont'd.	°	°	°	*Ins.*
Fort Columbus	88	54	70.0	2.37
Fort Hamilton	88	53	68.6	3.64
Fort Niagara	89	50	67.1	2.59
Fort Porter	84	43	65.0	1.50
Fort Schuyler	86	52	68.4	3.23
Fort Wadsworth	90	49	70.0	2.96
Geneva†	93	41	64.9	0.72
Hammondsport	85	40	62.2	0.67
Hess Road Station†	85	41	62.8	1.69
Honeymead Brook	83	38	64.1	1.22
Humphrey†	87	40	63.5	2.04
Ithaca	88	42	65.4	2.13
Keene Valley	91	26	58.5	1.75
Kings Station	.....	.....	.....	1.68
Le Roy	84	40	64.6	1.71
Little Valley	.....	.....	.....	1.87
Lockport	85	40	61.5	2.86
Lowville	.....	.....	60.2	1.74
Lyon Mountain(2)	.....	.....	.....	2.25
McLean	.....	.....	.....	1.91
Madison Barracks	89	40	64.6	1.86
Malone	84	34	59.1	1.78
Marshland†	90	39	59.9	1.36
Middletown	87	47	66.6	1.63
Minnewaska	81	45	61.9	4.35
Mount Morris	89	36	63.8	0.74
Newark Valley	.....	.....	.....	1.47
New Lisbon	83	36	59.0	1.39
North Hammond*†	82	45	62.8	1.48
Number Four†	79	34	58.5	2.21
Ogdensburgh (2)†	85	32	64.7	.....
Oxford	81	38	61.6	2.72
Palermo†	87	39	62.7	1.66
Palmyra	.....	.....	63.8	.....
Pawling	.....	.....	.....	1.86
Perry City	88	37	61.9	0.98
Plattsburgh	89	40	62.3	1.05
Plattsburgh B'ks	91	37	62.4	0.93
Port Jervis	85	42	65.1	1.82
Poughkeepsie	90	38	65.8	1.13
Quaker Street	87	41	61.4	1.00
Romulus	91	42	61.1	.....
Setauket†	87	53	66.9	3.18
Sherman	85	37	60.4	3.33
Schodack Depot	.....	.....	.....	2.55
South Canisteo	87	33	59.7	1.20
S. E. Reservoir	.....	.....	.....	2.00
South Kortright†	82	30	59.2	1.45
Syracuse*	87	47	64.8	.....
Turin	83	38	58.9	2.05
Utica	86	42	64.4	1.46
Victor	87	42	63.8	1.28
Wappingers Falls	.....	.....	.....	1.60
Watertown	82	40	59.4	3.59
Watervleit Arsenal	87	38	65.2	2.35
Watkins	92	36	66.6	0.82
Wedgwood	92	40	63.2	0.66
West Chazy	.....	.....	.....	1.05
West Point	.....	33	.....	1.60
White Plains*	80	50	66.8	0.76
Willets Point	89	51	68.3	3.03
North Carolina.				
Asheville†	87	43	66.0	3.25
Bakersville†	89	42	65.9	2.76
Bryson City†	.....	.....	.....	2.76
Chapel Hill†	94	49	73.4	1.38
Concord	90	54	71.9	0.55
Currituck Inlet	.....	.....	.....	0.83
Douglas	89	45	69.0	1.40
Fayetteville†	.....	.....	.....	1.84
Franklin	87	.....	61.7	4.00
Goldsborough†	90	54	73.2	2.35
Hendersonville*†	82	54	65.1	4.97
Lenoir*	84	48	67.9	3.10
Lexington†	92	51	71.5	1.18
Lillington†	.....	.....	.....	1.13
Littleton†	94	45	70.9	1.60
Louisburgh†	84	50	69.7	0.99
Lumberton†	91	51	73.1	1.59
Morganton*†	87	49	69.0	3.52
Mount Airy†	98	45	68.3	1.12
Mount Holly†	.....	.....	.....	1.29
Murphy†	.....	.....	.....	2.61
New Berne†	91	54	71.4	4.40
Oak Ridge†	87	46	66.5	1.46
Pittsborough	88	55	71.1	0.80
Salisbury	88	60	73.3	0.86
Saxon†	90	46	69.6	1.41
Smithfield	88	53	71.3	3.20
Soapstone Mount*	.....	54	69.0	2.00
Southern Pines†	92	47	71.8	0.68
Wadesborough	86	58	72.4	1.37
Wadeville†	88	55	71.0	1.38
Washington†	97	55	75.2	3.43
Weldon†	90	49	71.0	1.37
Willeyton	90	48	70.4	2.70
North Dakota.				
Carrington†	96	30	61.0	1.19
Ellendale†	96	32	69.0	0.78
Fargo†	92	29	61.5	2.09
Fort Buford	89	32	59.4	0.53
Fort Pembina	91	26	58.4	2.38
Fort Yates	98	35	65.2	1.66
Gallatin*†	96	28	.....	1.61
Grafton†	88	26	58.3	2.23

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
N. Dakota—Cont'd.	°	°	°	*Ins.*
Grand Forks† n	87	32	61.6	0.71
Grand Rapids†	97	24	63.6	0.94
Hope†	85	30	58.8	1.34
Kelso†	92	28	61.0	2.01
Lakota†	.....	.....	.....	1.97
Napoleon†	92	28	60.6	2.17
New England City†	91	34	.....	.....
Power†	94	33	64.3	2.80
Saint Johns† h	84	31	57.8	1.11
Saint Thomas†	90	26	57.4	3.01
Steele†	97	27	62.7	2.05
Valley City†	94	25	59.5	1.20
Wahpeton*†	94	32	60.8	2.32
Wild Rice†	.....	.....	59.2	2.58
Willow City†	92	19	56.7	1.55
Ohio.				
Akron	89	44	67.2	0.95
Ashland	88	49	67.0	1.07
Athens	91	42	66.0	2.33
Bangorville	97	43	67.9	0.81
Bellevue*	92	40	65.0	2.60
Bement	93	37	63.6	2.07
Caledonia†	.....	.....	.....	0.50
Canton†	90	41	66.4	1.07
Celina	89	46	65.9	1.00
Circleville(1)†	.....	.....	.....	2.40
Clarksville	93	42	66.8	1.80
Cleveland	92	46	66.1	1.71
Columbus Barracks	94	41	68.4	1.22
Dayton	92	44	69.1	1.75
Demos	89	46	67.7	1.29
Ellsworth	.....	.....	.....	1.41
Elyria	94	43	68.4	3.01
Findlay	92	37	66.4	0.42
Garrettsville	89	36	62.0	1.65
Georgetown	96	46	68.6	2.19
Granville	92	36	64.2	0.70
Gratiot	89	42	67.0	0.82
Greenfield	87	41	64.5	1.48
Greenville	85	41	65.5	2.10
Hanging Rock	92	44	66.2	2.75
Hassan*	94	49	67.3	0.42
Hiram	90	44	66.0	1.40
Hudson	.....	.....	.....	1.33
Jacksonborough	98	48	72.2	1.95
Kenton†	96	40	69.0	0.48
Logan	94	42	66.4	1.60
Lordstown	89	35	63.1	2.46
Manchester	88	50	69.5	.....
Mansfield†	.....	.....	.....	1.19
Marietta(1)†	.....	.....	.....	2.33
Marietta(2)	89	47	67.5	2.40
McConnelsville	91	42	67.4	2.04
Montpelier	91	39	65.8	0.65
Napoleon†	92	44	69.4	1.58
New Alexandria	90	43	68.9	1.36
New Comerstown	91	38	64.7	1.36
New Holland	89	43	66.0	1.91
North Lewisburgh	94	41	69.0	0.70
Oberlin	92	39	65.9	2.98
O. S. University	93	38	66.2	1.16
Orangeville	87	35	63.8	2.05
Pomeroy	89	43	67.7	2.67
Portsmouth (1)†	.....	.....	.....	2.80
Portsmouth (2)	94	46	67.3	2.80
Sidney†	.....	.....	.....	0.80
Springborough	.....	.....	.....	0.90
Tiffin†	91	42	67.8	1.71
Upper Sandusky	89	44	68.2	0.45
Van Wert	92	38	67.0	1.61
Wapakoneta	92	40	68.2	0.57
Wauseon	96	37	67.6	0.86
Waverly	99	42	67.3	2.08
Waynesville	.....	.....	.....	1.63
Westerville	88	41	64.9	0.76
Weymouth	93	38	66.0	1.25
Wheeler†	.....	.....	.....	3.53
Wooster†	98	42	67.9	0.93
Youngstown	91	40	66.9	1.22
Zanesville†	.....	.....	.....	0.93
Oklahoma Ter.				
Buffalo†	.....	.....	.....	6.60
Fort Reno	92	46	72.3	1.17
Fort Sill	94	49	74.2	1.05
Guthrie†	94	46	76.6	1.46
Oregon.				
Albany†	92	35	58.1	2.19
Arlington†	90	43	63.9	0.10
Ashland (1)	86	40	59.1	0.77
Ashland (2)	94	34	59.3	1.10
Bandon	72	41	55.7	2.81
Beulah†	95	22	58.0	0.30
Burns†	79	23	48.8	0.10
Cascade Locks	86	46	60.8	3.92
Corvallis	91	33	58.2	1.80
East Portland	80	34	.....	.....
Eola	90	36	57.4	2.51
Forest Grove	92	35	58.4	2.82
Gardiner	75	43	58.0	2.98
Grants Pass†	97	34	61.7	0.85
Heppner†	87	30	58.5	0.59
Hood River(near)	84	38	59.0	1.18
Hubbard	92	29	56.4	1.86
Jacksonville	91	39	60.2	1.27
John Day Junction	93	34	60.8	0.39

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean.	Precip'n.
Oregon—Cont'd.	°	°	°	*Ins.*
Joseph†	84	26	53.6	0.79
La Grande†	90	26	60.8	0.65
Lakeview†	100	24	57.0	0.38
McMinnville†	94	34	58.6	2.51
Mount Angel†	92	34	59.8	3.00
Newburg	93	42	60.6	2.50
New Bridge	94	31	61.2	0.00
Pendleton	94	28	59.6	0.05
Siskiyou	92	40	57.5	0.45
The Dalles	88	38	61.1	0.13
Toledo	84	48	59.8	3.33
Vernonia	90	34	56.2	3.95
Weston	85	22	58.8	0.42
Pennsylvania.				
Allegheny Arsenal	92	44	68.6	2.39
Altoona	86	47	69.2	2.71
Aqueduct*	91	47	67.9	1.00
Blooming Grove*	87	42	64.5	1.60
Blue Knob	84	36	63.1	3.10
Brookville†	.....	.....	.....	1.33
Browers Lock	.....	.....	.....	2.51
Carlisle	92	43	68.4	1.05
Charlesville	88	37	63.1	4.55
Clarion(1)†	.....	.....	.....	2.51
Coatsville	94	43	67.4	3.38
Confluence†	.....	.....	.....	3.62
Coopersburgh	86	45	66.5	2.04
Corry	88	32	60.3	2.46
Davis Island Dam†	.....	.....	.....	1.53
Doylestown	.....	.....	.....	1.98
Du Bois†	.....	.....	.....	1.95
Dyberry†	87	34	60.6	2.37
Easton	86	45	66.8	1.85
Edinborough*	86	40	65.4	.....
Emporium	88	38	66.5	1.17
F'ks of Neshaminy	.....	.....	.....	3.08
Frankford Arsenal	94	47	70.6	1.50
Frederick	.....	.....	.....	2.01
Freeport†	.....	.....	.....	2.54
Girardville	84	41	64.4	1.99
Grampian Hills	84	38	64.4	2.38
Greensborough†	.....	.....	.....	2.82
Hamburgh	91	43	66.7	1.77
Hollidaysburgh	91	36	64.5	2.16
Honesdale	82	38	63.4	2.53
Hulmeville	90	47	66.5	2.71
Huntingdon†	92	39	67.5	2.07
Johnstown†	92	42	67.4	2.11
Kennett Square	.....	.....	.....	5.00
Kilmer*	88	48	68.9	2.48
Lancaster	89	46	67.3	0.28
Landsdale	.....	.....	.....	2.57
Lebanon	91	40	66.9	1.07
Le Roy†	87	42	65.4	2.00
Lewisburgh	92	40	.....	2.90
Ligonier	90	37	66.7	2.17
Lock Haven†	91	40	66.0	3.41
Lock No. 4†	.....	.....	.....	2.02
Mahoning†	.....	.....	.....	1.01
McConnellsburgh	92	39	66.0	2.65
Meshoppen	.....	.....	.....	1.06
New Castle†	91	36	69.8	3.34
Oil City†	.....	.....	.....	1.50
Ottsville	.....	.....	.....	1.34
Parker's Landing†	.....	.....	.....	2.20
Philadelphia(1)	.....	.....	.....	1.19
Philadelphia(2)	91	49	71.6	1.88
Phœnixville	89	42	68.4	2.67
Pleasant Mount	.....	.....	61.8	2.55
Point Pleasant	.....	.....	.....	1.31
Pottstown	90	47	70.1	2.63
Quakertown	89	44	68.1	1.17
Reading†	.....	.....	65.8	1.57
Ridgway†	.....	.....	.....	1.31
Rush Valley	.....	.....	.....	3.09
Salem Corners	90	44	64.6	2.45
Saltsburgh†	.....	.....	.....	1.71
Seisholtzville	.....	.....	.....	3.25
Selins Grove	92	36	66.5	4.12
Smethport	89	37	60.8	2.15
Smiths Corners	.....	.....	.....	1.29
Somerset	94	33	62.2	4.12
South Eaton	87	40	63.3	1.35
State College	86	40	65.4	2.20
Stoyestown†	.....	.....	.....	2.39
Swarthmore	91	47	69.7	2.89
Troy*	90	42	64.6	2.47
Uniontown	88	41	68.6	2.23
Warren†	.....	.....	.....	2.66
Wellsborough	86	32	59.0	2.30
West Chester	90	46	69.2	4.30
West Newton†	.....	.....	.....	1.35
Wilkes Barre†	91	44	68.3	1.80
Wysox	87	37	64.1	1.79
York	92	40	69.0	1.88
Rhode Island.				
Bristol	82	50	66.4	1.82
Fort Adams	87	48	66.0	1.49
Kingston(1)	85	45	65.4	2.11
Kingston(2)	82	48	64.4	2.20
Lonsdale	.....	.....	.....	2.49
Olneyville	88	51	68.0	.....
Pawtucket	.....	.....	.....	2.43
Providence(1)	88	48	66.1	2.77
Providence(2)	92	47	66.5	2.90

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Rhode Island—Con.	°	°	°	*Ins.*
Providence (3)	88	49	65.8	3.13
South Carolina.				
Aiken	92	59	70.7	2.00
Allendale †	91	60	75.4	0.83
Batesburgh †	92	60	74.6	1.61
Belmont	88	58	72.2	2.81
Blackville†	90	60	74.8	2.40
Branchville†	89	56	73.8	5.54
Brewer Mine	90	56	73.3	1.72
Camden†				3.26
Cheraw (1)†	90	55	72.2	1.21
Cheraw (2)†				1.31
Chester †	90	52	73.0	2.05
Effingham†				1.80
Florence†	91	58	74.8	2.08
Greenville†	89	52	70.6	0.49
Greenwood †	92	58	74.0	3.72
Hardeeville†	88	62	75.6	3.53
Jacksonborough †	90	56	74.3	1.33
Kingstree†	95	57	74.8	1.50
Kitchings Mills†	92	64	76.8	1.83
Nichols †				1.91
Port Royal*†	88	69	76.4	2.98
Saint Georges†	89	58	74.6	4.28
Saint Matthews†	89	61	74.4	1.77
Simpsonville	91	52	72.0	1.20
Society Hill †	85	56	72.9	3.42
Spartanburg (2) †	92	50	73.2	2.12
Statesburgh†	86	61	72.0	3.06
Trial	91	56	75.6	3.47
Wateree †				3.31
Winnsborough†	89	62	75.6	1.84
Yorkville	90	58	73.4	1.68
South Dakota.				
Aberdeen †	97	28n	59.2n	1.56
Alexandria†	97	30	68.5	0.43
Britton†	96	31	63.2	2.04
Brookings †	98	24	65.1	0.48
Castlewood †	96	24	63.5	1.28
Clark†	100	33	66.7	1.11
Cross *	88	32	62.1	1.57
De Smet †			64.3	1.49
Elkton*	92	28	64.2	0.50
Flandreau †	99	27	65.7	0.35
Forest City †	107	38	70.3	1.66
Forestburgh †	99	29	65.4	1.02
Fort Bennett	103	35	69.0	1.26
Fort Meade	96	37	64.6	0.87
Fort Randall	94	32	68.4	0.36
Fort Sully	102	40	68.3	1.37
Frankfort†	97	28	64.2	0.67
Gary †	96	34	66.7	1.17
Howard †	98	28	66.5	0.50
Kimball †	98	31	66.4	0.18
Millbank*†	98	34	63.1	0.78
Mitchell †	94	34	66.9	1.95
Oelrichs†	97	28	63.8	2.32
Onida †	99	34	62.5	1.26
Parker †	96	27	67.1	0.38
Parkston	96	34	66.8	0.25
Sioux Falls †	96	28	66.0	T.
Spearfish †	92	39	63.4	0.71
Tyndall †	93	35	68.4	0.26
Webster †	104	28	70.0	4.11
Wessington Spr'gs†	97	36	67.6	0.23
Wolsey*†	99	39	66.6	0.35
Tennessee.				
Andersonville	89	57	75.2	0.90
Arlington †	100	44	71.8	0.87
Ashwood*†	91	53	70.2	0.62
Austin †	92	50	71.5	1.12
Bethel Springs*	88	52	68.4	3.08
Bolivar (2)†	95	48	72.8	1.24
Brownsville†	97	48	73.2	2.92
Carthage †				1.01
Charleston †				2.09
Clarksville	91	53	71.3	0.61
Clinton †				0.81
Columbia †				0.90
Covington (1) †	93	49	72.0	0.66
Covington (2) †	97	48	73.6	0.32
Dyersburgh (2) †	98	49	72.7	1.69
Fayetteville *	92	56	71.0	0.65
Florence Station*	84	55	71.8	0.36
Franklin *	93	53	69.2	2.22
Grand Junction†	94	46	72.4	0.28
Greeneville*	82	51	75.7	1.03
Harriman†	95	50	72.4	0.10
Hohenwald			70.4	0.72
Jacksborough*	87	47	68.0	0.25
Johnsonville †				1.71
Kingston (1)†				0.76
Kingston Springs*	90	53	70.0	0.40
Lewisburgh*	82	64	73.8	0.38
Loudon †				1.30
Lynnville*	96	52	70.5	0.90
McMinnville*	88	53	70.2	0.74
Milan †	95	48	72.4	0.27
Missionary Ridge*		58	69.6	
Newport*	89	60	70.8	1.30
Northville *	86	54	67.6	
Nunnelly *	91	51	70.0	0.61
Riddleton†	91	46	70.0	0.97
Rockwood †				0.95
Rogersville*†	86	56	67.8	1.02
Tennessee—Con'd.				
Rugby *	86	53	66.6	1.90
Savannah *	92	52	72.5	1.39
Sharp *	96	54	71.3	0.68
Springdale *	92	52	71.4	2.21
Strawberry Plains†				2.30
Trenton	90	51	68.6	1.39
Union City*	97	57	73.2	0.54
Waynesborough *..	90	48	68.1	0.00
Texas.				
Arthur City†				2.65
Austin (1)†	93	65	80.8	5.25
Austin (2)*	93	58	77.4	
Berlin	99	54	79.6	1.30
Big Spring				3.50
Brady†	94	48	75.1	2.37
Brazoria †	90	60	76.1	11.49
Brenham †	95	56	78.6	3.27
Brownwood†	95	51	76.4	1.21
Burnet†	89	63	76.2	2.55
Camp Eagle Pass ..	100	59	80.2	1.03
C'p Peña Colorado..	99	46	71.8	3.10
Childress †				T.
Coldwater†	98m	45m	69.0m	5.25
College Station	95	61	79.2	4.93
Colorado (3)				0.30
Columbia†	92	58	76.8	4.62
Corsicana (2)†	94	52	76.2	1.95
Dallas (2) †	94	56	79.2	1.37
Durham				5.03
Duval *	98	60	81.5	2.05
Fort Bliss	100	50	77.9	0.32
Fort Brown	94	60	75.7	5.69
Fort Clark	98	61	80.0	1.60
Fort Hancock	102	42	72.0	0.37
Fort McIntosh	96	64	80.4	0.89
Fredericksburgh* †	95	50	74.7	2.06
Gainesville †	93	52	76.0	2.39
Gallinas †	100	51	76.7	5.40
Graham †	100	47	76.6	1.37
Grapevine †	100	52	76.4	2.14
Hansford†	95	40	67.4	4.39
Hartley †	97	45	68.3	4.46
Haymond				2.30
Hearne†	94	54	76.4	1.35
Houston†	92	55	76.7	5.81
Huntsville†	92	56	77.0	4.64
Llano †	96	56	80.0	0.71
Longview †	94	50	76.8	3.04
Luling †	98	54	79.2	3.10
Menardville* †	95	53	74.5	2.18
Mesquite †	98	51	76.8	3.85
Midland				6.20
Mountain Springs†	95	47	75.6	2.48
New Braunfels†	95	53	77.8	2.58
New Ulm	95	52	77.6	2.54
Odessa†	99d	67g	81.5d	3.03
Orange †	92	40	74.0	5.19
Panter †				0.88
Paris†	96	52	78.1	1.90
Quanah †	96	52	76.0	2.05
Roby †	98	52	76.6	0.67
Round Rock †	98	50	78.8	2.97
San Antonio	96	57	78.6	3.55
Sanderson				0.90
Sierra Blanca (1) †	102	51	74.8	1.79
Sierra Blanca (2)				2.17
Silver Falls†	98	46	74.8	3.42
Tyler†	89	50	73.8	3.10
Venus †	97	47	77.6	3.18
Waco (2) †	94	52	77.3	1.20
Weatherford †	94	54	76.4	1.69
Utah.				
Beaver †	91	30	60.9	1.24
Blue Creek *	90	30	64.1	0.60
Castle Gate †	89	38	58.3	2.28
Ciscog	93	43	66.8	2.42
Corinne*	92	38	65.3	1.95
Deseret †	90	32	61.1	0.62
Fort Douglas	94	39	66.4	1.27
Fort DuChesne	92	37	60.8	1.46
Green River †	95	40	70.6	1.15
Grouse Creek †				0.71
Kelton*	94	39	65.4	2.06
Lake Park	90	36	63.2	1.53
Levan			58.8	3.59
Logan	90	33	63.6	1.44
Loseet	89	31	57.9	3.60
Moabt	88	43	65.5	2.41
Mount Carmel*†	89	34	60.7	2.44
Ogden (1) *	86	36	64.9	2.16
Park City †			53.6	2.78
Parowan †	93	34	60.4	2.10
Promontory *	90	35	61.7	2.70
Provo City †			58.7	0.76
Richfield†	95	32	66.5	0.81
Saint Georges†	104	44	74.1	1.60
Scofield*†	70	26	44.6	1.85
Snowville †	84	40	61.5	2.64
Soldier Summit†				1.97
Sockton †			60.3	
Terrace *	88	36	62.7	0.70
Vermont.				
Brattleborough (1).	88	39	63.2	1.29
Burlington†	85	43	63.8	2.44
Chelsea	78	40	56.8	2.14
Virginia—Cont'd.	°	°	°	*Ins.*
Cornwall				2.25
Enosburgh Falls †	85	35	62.6	2.98
Hartland†	85	35	60.6	2.34
Jacksonville	84	33	59.4	1.47
Lunenburgh	84	42	63.6	2.14
Strafford *	82	42	63.1	1.60
Vernon	90	40	65.1	0.83
Weathersfield C'tre	86	36	63.1	
Virginia.				
Abingdon †				1.16
Bedford City†	88	48	69.7	1.54
Big Stone Gap†	87	44	66.6	1.40
Birdsnest *†	86	57	71.9	2.05
Cape Charlest*	88	59	72.2	2.40
Christiansburgh †				1.34
Clarksville †				1.48
Dale Enterprise †	90	42	67.6	2.02
Danville †				1.03
Fort Monroe	90	58	72.4	2.15
Fort Myer	91	47	69.7	3.20
Lexington †	88	44	68.2	1.50
Marion †	85	42	65.6	2.13
Mossing Ford* †	84	54	70.0	1.25
Nottaway C. H	96	43	71.8	1.59
Petersburgh †	93	47	71.6	2.73
Richmond †	100	47	75.3	2.32
Stanardsville †	92	58	75.4	3.40
Staunton†	93	44	69.7	1.77
Woodstock †				1.12
Wytheville †	83	46	65.8	0.98
Washington.				
Aberdeen †	86	39	56.8	8.52
Chehalis †	80	32	57.4	3.09
Chelan †	87	37	62.7	0.23
Dayton†	89	31	60.7	0.75
Doe Bay †	76	43	55.8	4.24
East Sound †	72	43	57.2	5.48
Fort Canby	82	44	57.5	4.86
Fort Simcoe *	90	46	65.9	0.06
Fort Spokane	93	29	60 8	0.16
Fort Townsend	76	38	55.3	1.78
Fort Walla Walla..	91	38	63.8	0.15
Lapush †				8.03
Madrone †	76	40	57.4	2.78
Tacoma †	75	40	58.4	4.15
Vancouver B'ks	91	39	60.4	2.68
Vashon †	80	39	56.6	0.39
Waterville †	87	26	57.6	0.33
West Virginia.				
Buckhannon †				2.25
Charleston†				1.27
Ella* †	85	49	66.4	1.48
Glenville †	90	46	68.6	1.63
Harpers Ferry †				0.38
Hinton †				0.48
Kingwood* †	84	44	63.7	
Morgantown †				3.20
Pleasant Hill*	82	38	61.6	
Point Pleasant†				1.32
Rowlesburgh (1)				1.62
Tannery *	88	42	66.4	
Weston†				4.07
Wheeling (1)†				1.63
Wheeling (2) * †	91	51	72.0	
Wisconsin.				
Amherst	91	31	63.2	1.37
Appleton (1) †	88	39	66.0	0.71
Baraboo†	94	34	65.8	0.58
Barron †	90	29	59.5	1.46
Bayfield	91	40	64.7	2.86
Beaver Dam	91	39	66.2	0.29
Berlin	95	35	67.0	1.05
Black River Falls	95	28		1.73
Butternut†	91	32	60.8	1.71
Cadiz			64.3	0.02
Wisconsin—Cont'd.	°	°	°	*Ins.*
Centralia	93	32	64.0	2.28
Chippewa Falls†				1.55
Columbus	95	35	61.2	0.27
Crandon †	92	27	63.0	3.31
Dodgeville†	93	51	71.4	0.66
Eau Claire (1)	92	34	65.0	1.07
Ellsworth	94	40	69.4	0.68
Embarrass* †	90	45	65.6	1.85
Florence †	89	31	60.0	1.37
Fond du Lac	96	34	65.0	0.58
Hammond †	92	35	65.2	1.48
Harvey †	95	38	67.6	0.21
Hayward†	91	29	60.4	1.93
Hillsborough	95	33	64.2	1.04
Honey Creek*	92	36	66.0	0.91
Hudson		43		0.33
Janesville	93	39	68.0	0.18
Kenosha	95		67.2	0.72
Koepenick *†	88	38	63.8	1.60
Lincoln			65.2	1.42
Madison	90	35	67.0	0.38
Manitowoc	91	36	64.9	0.76
Meadow Valley †	94	29	64.4	1.82
Medford (1) †				2.78
Medford (2)†	90	29	62.0	2.60
Menomonie	94	33	65.2	1.41
Neillsville†	89	30	62.2	1.96
Oconomowoc †	93	38	67.8	0.27
Oconto	92	35	64.8	1.29
Osceola Mills†	96	31	65.1	1.52
Oshkosh †	91	40	67.2	1.18
Pepin	94	37	66.2	0.75
Peshtigo	90	31	62.2	1.31
Phillips †	93	28	61.2	2.40
Plover †	90	29	61.2	2.91
Portage (1) †				0.64
Prairie du Chien	97	39	69.2	1.73
Rhinelander	88	29	61.5	2.05
Shawano	91	31	62.6	1.13
Shell Lake	92	38	63.9	1.25
Sparta †	91	33	64.8	2.08
Viroqua†	94	40	66.4	1.44
Watertown	91	37	66.0	0.48
Waukesha †				0.58
Westfield †	92	33	67.3	1.10
Weston*†	98	39	60.4	1.37
Whitehall †	98	30	65.7	1.00
Wyoming.				
Camp Pilot Butte..	89	30	55.8	1.70
Evanston	92	28	54.9	2.49
Fort D. A. Russell.	88	22	54.5	1.48
Fort Fetterman†	100	33	64.2	1.00
Fort McKinney	87	32	63.2	0.42
Fort Washakie	85			0.92
Fort Yellowstone..	79	24	52.2	1.74
Lander	87	31	58.6	0.90
Laramie (1)†	78	31	54.0	2.11
Laramie (2)	77	30	55.2	1.80
Lusk†	87	27	58.8	0.61
Saratoga †	88	29	56.6	1.76
Sheridan		25	53.0	1.27
Sundance	87	34	59.7	0.81
Wheatland†	88	30	55.1	2.32
Mexico.				
Guanajuato	85	50	65.1	2.53
Leon de Aldemas..	84	50	67.7	2.80
Mazatlan	90	74	83.7	5.81
Mexico	74	49	61.8	4.10
Pueblo	76	50	63.1	1.44
Topolobampo	93	49	87.2	3.09
Vera Cruz	86	75	80.6	12.38
New Brunswick.				
Saint John	69	41	57.6	5.14
West Indies.				
Hamilton, Bermuda	82	70	77.2	7.69

Received too late to be used in general discussion for September, 1891.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Alabama.				
Childersburgh				2.43
Arizona.				
Antelope Valley				0.54
Lochiel				0.83
Peoria	106	52	81.4	0.12
Russellville				0.71
Tempe	107	41	79.0	0.15
California.				
Campo	90			0.00
Jolon				T.
Placerville (2)	93	33	63.4	0.37
Yreka	94	22	55.8	0.82
Illinois.				
Louisville	94	47	71.1	1.40
Kansas.				
Lawrence	90	43	69.0	2.23
Maryland.				
Cumberland (2)	90	49	70.7	2.55
Maryland—Cont'd.				
Jewell	80	60	71.8	0.88
McDonough	86	50	67.2	2.92
Mt. St. Mary's Col..	90	42	69.8	1.85
New York.				
Angelica	84	32	59.1	1.37
Lyons	88	45	64.4	1.16
Middleburgh	90	41	63.6	0.70
Oregon.				
Eugene				1.56
Happy Valley	92	26	56.6	0.74
South Carolina.				
Tillers Ferry				4.22
Texas.				
Cuero	99	56	82.3	3.74
Kent				1.55
Temple	98	56	77.2	1.81
Washington.				
Moxee Valley m	92	24	58.5	T.

Received too late for publication in August, 1891.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Alaska.	°	°	°	*Ins.*
Coal Harbor	70	52	56.7	.....
Arizona.				
Chiricahua Mts	.....	.....	.....	8.93
Lochiel	.....	.....	.....	5.65
Peoria	108	69	89.4	0.07
Willcox	102	65	84.1	2.10
California.				
Beaumont	100	64	78.3	1.87
Cisco	90	41	60.2	0.00
Glen Ellen	108	54	74.9	0.00
Newark	100	57	68.7	0.00
Ontario	104	60	81.5	0.00
Colorado.				
Beaver Creek	.....	.....	.....	0.31
Brandon	.....	.....	.....	1.11
Chivington	.....	.....	.....	1.02
Cope	.....	.....	.....	2.20
Gold Hill	.....	.....	.....	4.45
Granada	.....	.....	.....	1.75
Minneapolis	.....	.....	.....	0.97
Wray	.....	.....	.....	0.45
Florida.				
Homeland	95	74	82.0	5.95
Georgia.	°	°	°	*Ins.*
Quitman(1)	.....	.....	.....	5.40
Indiana.				
Richmond	94	50	71.2	2.47
Kansas.				
Tribune	99*f*	44*f*	71.6*f*	1.19
Minnesota.				
Rolling Green	93	40	68.1	2.77
North Carolina.				
Washington	97	61	80.1	11.93
South Carolina.				
Tillers Ferry	.....	.....	.....	6.09
South Dakota.				
Webster	104	25	68.7	1.10
Texas.				
Childress	.....	.....	.....	0.71
Washington.				
Dayton	103	43	71.8	0.05
Mexico.				
Mazatlan	90	76	83.1	5.71
Mexico	76	50	63.5	4.79

Letters of the alphabet denote the number of days missing from the record, thus: the letter *e* indicates three days missing, etc., etc.

*Extremes of temperature from observed readings.

† Weather Bureau instruments.

Corrections: July, 1891, page 176, under "Reports received too late," etc., read "North Dakota" instead of "South Dakota."

Data from Canadian stations for the month of September, 1891.

Station.	Pressure. Mean not reduced.	Mean reduced.	Departure from normal.	Temperature. Mean.	Departure from normal.	Precipitation. Total.	Departure from normal.	Prevailing direction of wind.
	Inches.	*Inches.*	*Inches.*	°	°	*Inches.*	*Inches.*	
Saint Johns, N. F.	29.87	30.01	.....	53.8	— 1.6	2.90	.....	w.
Sydney, N. S	30.00	30.06	+ .04	57.8	+ 1.8	3.72	+ 0.48	sw.
Anticosti, Gulf of St. L.	.....	.....	.....	.....	.....	.....	.....	.....
Halifax, N. S.	29.97	30.10	+ .04	59.8	+ 3.3	3.05	— 0.50	w.
Grand Manan, N. B	30.01	30.06	.....	59.0	.....	2.15	+ 0.35	sw.
Yarmouth, N. S.	30.04	30.12	+ .05	57.5	+ 2.0	5.55	+ 2.96	sw.
Saint Andrews, N. B.	30.03	30.08	.....	57.8	.....	2.67	+ 0.05	nw.
Charlottetown, P. E. I.	30.01	30.05	.....	59.4	.....	5.09	+ 2.23	sw.
Chatham, N. B.	30.02	30.04	+ .01	57.2	+ 4.2	4.19	+ 1.47	sw.
Father Point, Que.	29.97	30.00	+ .02	52.8	+ 2.8	3.78	+ 0.98	w.
Quebec, Que	29.74	30.06	+ .05	57.6	+ 2.6	2.52	— 1.15	w.
Montreal, Que	29.89	30.09	+ .07	61.2	+ 3.7	1.03	— 2.20	w.
Rockliffe, Ont	29.60	30.05	+ .04	55.6	+ 3.1	2.00	— 1.64	nw.
Kingston, Ont	29.80	30.11	+ .08	61.4	+ 1.9	1.12	— 1.65	sw.
Toronto, Ont	29.74	30.12	+ .06	61.2	+ 3.2	1.69	— 1.06	nw.
White River, Ont.	26.70	30.03	.....	53.4	.....	2.78	.....	s.
Port Stanley, Ont.	29.50	30.13	.....	61.0	.....	2.03	— 0.62	w.
Saugeen, Ont	29.41	30.11	+ .09	60.3	+ 3.8	2.73	— 0.78	s.
Parry Sound, Ont	29.41	30.09	+ .00	59.1	+ 3.6	2.30	— 1.97	se.
Port Arthur, Ont	29.26	29.95	— .01	55.7	+ 5.2	3.24	— 0.23	ne.
Winnipeg, Man	29.09	29.91	— .01	54.4	+ 5.4	2.20	+ 0.20	n.
Minnedosa, Man	28.11	29.89	— .03	51.6	+ 5.1	1.09	— 0.14	e.
Qu'Appelle, Assiniboia	27.68	29.91	— .01	51.2	+ 2.7	0.89	— 0.31	s.
Medicine Hat, Assiniboia	27.57	29.84	— .04	56.4	+ 1.9	1.14	— 0.15	sw.
Swift Current, Assiniboia	.....	.....	.....	.....	.....	.....	.....	.....
Calgary, Alberta	26.38	29.89	— .01	50.8	+ 1.3	0.77	.....	w.
Prince Albert, Saskatch'n	28.32	29.91	.....	49.3	.....	0.56	.....	s.
Esquimalt, B. C.	.....	29.98	— .08	54.1	— 0.4	4.27	+ 3.94	se.
Stony Mountain, Man	.....	29.84	.00	56.6	+ 5.6	1.89	— 0.17	n.
Port Moody, B. C	.....	29.87	— .06	56.8	+ 0.1	8.59	+ 5.25	w.
St. Albans, Man.	28.72	.....	+ .01	58.4	+ 5.3	1.23	— 0.27	.....
Edmonton, Alberta	27.54	29.86	.....	49.6	.....	1.26	.....	nw.
Battleford, Saskatchewan	28.10	29.81	.....	53.2	.....	0.43	.....	nw.
Grindstone, Gulf St. L.	29.97	30.00	.....	56.4	.....	5.71	.....	sw.
Hamilton, Bermuda	29.88	.....	.....	76.8	.....	8.91	.....	ne.

Table of miscellaneous meteorological data for September, 1891—Weather Bureau observations.

Districts and stations.	Elevation above sea-level, feet.	Length of record, years.	Pressure, in inches.			Temperature of the air, in degrees Fahrenheit.									Humidity and precipitation.					Wind.					Cloudless days.	Partly cloudy days.	Cloudy days.	Average cloudiness, tenths.	Mean temperature data since opening of station.			
			Mean pressure, 8 a. m. and 8 p. m. + 2.	Mean reduced.	Departure from normal.	Mean max. and min. + 2.	Departure from normal.	Maximum.	Date.	Mean maximum.	Minimum.	Date.	Mean minimum.	Greatest daily range.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches.	Departure from normal.	Days with .01, or more.	Total movement, miles.	Prevailing direction.	Maximum velocity. Miles per hour.	Maximum velocity. Direction.	Maximum velocity. Date.					Highest for month.	Year.	Lowest for month.	Year.
New England.						64.8	+ 4.1										2.67	— 1.2														
Eastport	53	19	30.02	30.08	+ .05	58.4	+ 3.2	76	11	65	44	24	52	23	51	83	2.65	— 0.9	7	5,099	sw.	28	nw.	30	9	10	11	6.0	58.4	1891	53.4	1875
Green Mountain	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Portland	99	20	30.00	30.10	+ .05	62.8	+ 5.1	89	25	71	45	9	55	28	56	82	1.94	— 1.3	9	5,078	sw.	26	sw.	29	13	9	8	4.5	64.2	1881	55.8	1888
Manchester	247	5	29.88	30.14	.....	64.5	.....	88	18	75	40	9	54	37	55	77	1.61	.....	11	2,715	nw.	20	w.	18	18	7	5	3.5	64.5	1891	50.4	1887
Mt. Killington	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mt. Washington	6,279	21	23.96	30.12	.....	44.0	.....	59	28	49	20	30	39	17	39	85	3.69	— 5.0	16	21,965	nw.	99	nw.	25	5	8	17	6.9	48.6	1881	35.2	1875
Northfield	872	5	29.21	30.13	.....	60.6	.....	85	*	72	36	15	49	33	54	84	0.98	.....	12	5,313	s.	33	s.	29	7	16	7	5.4	60.6	1891	52.6	1887
Boston	125	21	30.01	30.15	+ .08	66.7	+ 4.6	90	18	74	50	9	60	26	58	78	2.29	— 0.9	11	6,482	sw.	27	sw.	29	18	6	6	3.8	66.7	1891	59.3	*
Nantucket	14	5	30.14	30.15	.....	65.4	.....	77	6	71	56	15	60	17	59	82	3.12	.....	7	6,173	sw.	48	ne.	7	17	9	4	3.6	65.4	1891	60.5	1887
Woods Holl	22	14	.....	.....	.....	65.8	.....	80	26	71	54	*	60	16	.....	.....	3.72	+ 1.2	8	8,150	s.	41	n.	7	15	8	7	4.7	65.8	1891	60.0	1888
Vineyard Haven	.....	5	.....	.....	.....	67.9	.....	80	*	75	54	9	61	23	.....	.....	4.87	.....	5	.....	sw.	.....	.....	.....	17	4	9	....	67.9	1891	61.1	1888
Block Island	27	12	30.13	30.16	+ .08	65.8	+ 3.1	81	26	71	56	9	61	20	61	88	1.69	— 1.5	7	7,965	sw.	34	se.	5	12	12	6	4.7	66.8	1881	60.8	1888
Narragansett Pier	22	10	.....	.....	.....	67.3	+ 5.1	84	26	75	50	20	59	25	.....	.....	1.22	— 1.4	4	.....	sw.	.....	.....	.....	11	10	9	....	67.3	1891	59.4	1885
New Haven	107	19	30.02	30.13	+ .04	66.4	+ 4.0	88	18	75	45	9	58	26	60	82	3.96	0.0	6	4,512	sw.	22	sw.	29	12	14	4	4.4	69.0	1881	59.7	1887
New London	47	21	30.09	30.14	+ .06	66.4	+ 3.5	86	26	73	48	9	59	24	59	83	2.60	— 1.9	9	3,995	n.	23	s.	29	12	14	4	4.4	68.3	1881	58.4	1871
Mid. Atlantic States.						70.8	+ 2.9										2.52	— 1.5														
Albany	85	18	30.05	30.14	+ .07	67.4	+ 4.5	91	18	76	48	9	59	28	58	80	1.94	— 1.7	8	4,299	s.	30	se.	29	11	14	5	3.8	70.9	1881	58.5	1875
New York, N. Y	185	21	29.96	30.15	+ .06	70.1	+ 3.9	87	18	77	54	9	63	24	62	80	2.12	— 1.8	9	5,847	s.	28	n.	5	12	13	5	4.5	72.2	1881	60.8	1871
Harrisburg	377	4	29.76	30.16	.....	69.4	.....	88	*	79	50	10	60	30	59	76	1.75	.....	8	3,439	w.	24	w.	13	13	11	6	3.8	69.4	1891	61.6	1888
Philadelphia	117	21	30.04	30.16	+ .06	71.6	+ 4.4	91	26	80	51	9	63	26	61	77	1.90	— 1.5	7	5,481	sw.	26	nw.	7	20	5	5	3.5	74.8	1881	62.6	1871
Atlantic City	53	18	30.12	30.17	+ .09	69.0	+ 2.8	86	18	75	50	9	63	23	63	82	0.90	— 2.6	5	6,484	se.	28	n.	30	17	11	2	2.9	72.6	1881	60.2	1888
New Brunswick	.....	.....	.....	.....	.....	68.4	.....	90	26	79	44	9	58	33	.....	.....	2.20	.....	4	.....	se.	....	.....	...	9	13	8	....	....	....	....	....
Baltimore	179	21	29.97	30.16	+ .06	70.6	+ 2.4	90	18	79	51	9	62	26	63	81	5.46	+ 1.6	5	4,008	nw.	24	sw.	5	17	11	2	3.1	76.9	1881	63.4	1871
Washington, D. C	112	21	30.05	30.17	+ .06	70.3	+ 2.9	90	18	80	49	10	61	27	62	83	3.12	— 0.9	5	3,012	s.	18	nw.	7	20	7	3	3.0	77.0	1881	62.3	1871
Cape Henry	.....	18	.....	.....	.....	73.1	+ 0.7	87	5	79	60	21	67	23	.....	.....	3.13	— 1.7	5	.....	ne.	.....	.....	...	18	6	6	....	77.5	1891	68.6	1889
Lynchburgh	685	21	29.45	30.18	+ .09	71.6	+ 2.7	93	19	82	48	10	61	33	62	80	1.69	— 2.2	6	1,948	se.	14	e.	24	17	11	2	3.5	78.4	1881	62.1	1871
Norfolk	43	21	30.11	30.15	+ .06	73.3	+ 2.1	90	19	81	59	10	66	26	65	81	2.43	— 2.4	8	4,195	ne.	21	nw.	7	20	7	3	3.1	77.5	1881	67.5	1871
S. Atlantic States.						74.7	+ 0.5										4.31	— 1.4														
Charlotte	773	13	29.35	30.15	+ .06	72.3	+ 1.9	90	17	82	57	15	62	27	62	77	0.76	— 2.7	5	3,369	ne.	18	ne.	30	18	9	3	3.2	77.4	1881	68.0	1879
Hatteras	11	11	30.14	30.16	+ .09	74.5	+ 1.0	83	6	79	66	22	70	12	68	81	4.04	— 2.1	10	7,201	n.	42	n.	13	16	8	6	4.1	78.7	1881	70.9	1887
Kitty Hawk	9	16	30.12	30.13	.....	73.5	+ 0.3	87	19	78	62	22	69	17	65	77	2.05	— 3.1	7	8,734	ne.	44	ne.	30	20	5	5	3.1	77.4	1881	70.0	1879
Raleigh	388	5	29.75	30.16	.....	72.0	.....	89	19	81	51	10	63	29	65	82	1.76	.....	5	2,927	ne.	24	ne.	12	18	5	7	3.6	72.0	1891	67.3	1887
Southport	34	16	30.08	30.11	.....	73.3	— 0.6	84	16	80	58	21	67	20	70	88	5.04	— 0.2	11	5,450	ne.	29	se.	28	13	9	8	5.1	77.8	1881	71.0	1887
Wilmington	78	21	30.06	30.14	+ .07	74.0	+ 0.8	91	19	82	58	10	66	27	66	83	4.61	— 2.2	12	4,395	ne.	24	ne.	30	14	11	5	4.2	78.8	1881	70.1	1871
Charleston	52	21	30.07	30.12	+ .06	76.3	+ 0.9	89	20	83	64	22	70	20	70	86	6.06	0.0	11	4,127	ne.	36	ne.	11	11	14	5	4.5	80.7	1881	72.6	1871
Columbia	.....	5	.....	.....	.....	74.0	.....	92	23	84	59	11	64	30	.....	.....	4.94	.....	6	.....	ne.	....	.....	...	20	6	4	....	74.0	1891	71.6	1888
Augusta	209	20	29.94	30.16	+ .08	75.0	— 0.4	92	23	84	62	14	66	28	66	80	2.15	— 1.8	6	2,220	ne.	17	ne.	27	13	11	6	4.2	79.4	1881	73.0	1879
Savannah	87	21	30.04	30.13	+ .07	75.8	+ 0.3	89	20	83	64	23	68	22	69	86	2.69	— 3.3	8	4,055	ne.	26	ne.	11	8	11	11	5.8	80.0	1881	71.6	1871
Jacksonville	43	20	30.05	30.10	+ .07	77.6	— 0.1	89	7	85	65	*	70	20	70	83	10.83	+ 2.9	11	4,031	ne.	26	w.	11	5	11	14	6.5	79.9	1881	76.1	1887
Florida Peninsula.																																
Jupiter	28	4	30.01	30.04	.....	79.0	.....	90	13	85	69	28	73	15	75	88	11.77	.....	21	5,848	ne.	36	ne.	15	5	15	10	6.1	79.8	1889	79.0	*
Key West	22	21	30.01	30.03	+ .04	81.0	— 1.0	90	14	86	70	27	75	17	74	77	10.39	+ 3.0	18	5,298	e.	31	ne.	17	4	20	6	5.6	84.5	1877	80.3	1890
Micco	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13.70	.....	17	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tampa	36	....	30.02	30.06	.....	79.6	.....	92	14	88	68	25	71	22	72	86	7.96	.....	20	3,345	ne.	27	e.	17	9	9	12	5.8	.....	.....	.....	.....
Titusville	44	5	30.03	30.07	.....	78.0	.....	88	12	84	68	22	72	16	73	85	11.75	.....	21	6,959	ne.	40	e.	19	9	11	10	5.8	79.4	1889	77.8	1887
Eastern Gulf States.						76.1	+ 0.2										2.11	— 2.4														
Atlanta	1,131	13	28.98	30.15	+ .05	72.3	+ 1.1	90	20	82	53	6	63	27	61	73	1.19	— 3.3	8	5,251	e.	24	ne.	29	17	6	7	3.7	74.9	*	68.8	1888
Pensacola	56	12	30.00	30.06	+ .03	77.0	— 0.5	89	23	85	61	6	69	24	69	80	1.50	— 4.1	7	5,810	ne.	32	se.	20	19	8	3	3.4	79.5	1884	75.3	1882
Auburn	.....	10	.....	.....	.....	72.7	.....	92	17	83	53	15	62	33	.....	.....	3.16	.....	5	.....	e.	....	.....	...	12	13	5	....	77.6	1884	71.7	*
Mobile	35	21	30.04	30.08	+ .05	76.6	— 0.3	91	22	86	57	5	67	28	68	83	4.05	— 1.1	12	4,449	n.	36	n.	3	9	15	6	5.2	79.3	1881	74.9	*
Montgomery	217	20	29.87	30.10	+ .05	76.0	+ 0.5	94	22	87	56	6	65	29	63	71	2.15	— 1.0	8	3,082	ne.	22	w.	9	20	4	6	3.1	79.0	1884	73.2	1880
Meridian	358	....	29.74	30.12	.....	73.6	.....	93	23	87	49	5	60	36	62	74	0.36	.....	3	3,198	e.	21	nw.	3	17	8	5	3.8	.....	.....	.....	.....
Vicksburg	254	21	29.80	30.06	+ .01	76.6	+ 0.9	94	19	87	53	5	66	26	64	74	0.35	— 3.7	4	3,908	n.	26	se.	21	16	7	7	3.8	79.7	1872	71.7	1880
University	.....	5	.....	.....	.....	74.7	.....	97	22	88	46	5	62	33	.....	.....	0.85	.....	6	.....	n.	....	.....	...	1	27	2	....	75.9	1887	70.8	1888
New Orleans	54	21	30.02	30.08	+ .07	77.9	— 0.3	90	1	85	63	5	71	19	69	82	3.43	— 1.5	12	5,673	ne.	48	ne.	20	10	17	3	4.5	80.9	1884	73.6	1878
Port Eads	.....	....	30.06	.....	.....	79.1	.....	88	3	83	68	12	75	14	72	80	6.01	.....	8	.....	ne.	40	ne.	23	4	18	8	5.7	....	.....	.....	.....
Western Gulf States.						76.0	+ 0.5										3.04	— 1.2														
Shreveport	249	21	29.82	30.07	+ .03	75.6	— 0.8	91	2	86	54	5	65	28	65	78	4.35	0.0	5	3,365	se.	26	se.	21	17	6	7	4.1	80.2	1884	70.5	1880
Fort Smith	492	10	29.60	30.10	+ .08	73.5	+ 1.1	94	22	86	48	4	61	36	61	71	0.87	— 2.3	6	3,696	e.	24	nw.	28	20	7	3	3.3	77.3	1884	69.8	1890
Little Rock	309	13	29.78	30.10	+ .04	74.5	+ 1.1	93	*	85	52	5	64	30	62	73	0.87	— 2.6	3	2,557	se.	29	nw.	2	14	12	4	3.8	76.6	1884	68.8	1880
Corpus Christi	20	5	30.00	30.02	.....	78.6	.....	90	3	84	66	6	74	18	72	80	4.65	.....	14	8,571	se.	42	e.	24	6	8	16	6.1	79.4	1887	75.9	1889
Galveston	44	21	30.01	30.05	+ .05	78.3	— 0.4	87	20	83	67	21	74	14	71	77	7.01	— 0.1	12	7,949	se.	40	ne.	21	22	4	4	2.9	83.5	1884	76.9	1875
Palestine	511	10	29.52	30.00	+ .01	75.6	+ 0.2	92	2	86	52	5	65	30	62	71	1.53	— 1.9	6	3,388	ne.	24	e.	22	9	11	10	5.3	79.6	1884	71.9	1889
San Antonio	705	13	29.32	30.05	+ .04	78.6	+ 1.9	96	11	90	57	5	67	35	62	66	3.60	— 0.5	11	4,394	e.	36	ne.	29	14	11	5	3.7	80.3	1877	73.6	1889
Rio Grande Valley.						80.2	— 0.6										5.23	— 0.6														
Brownsville	57	16	29.93	29.99	+ .02	79.0	— 1.0	92	1	88	64	6	70	24	72	87	6.73	— 1.1	17	2,849	e.	30	s.	3	6	12	12	5.9	82.1	1876	77.3	1889
Rio Grande City	170	14	29.78	29.96	+ .01	81.4	— 0.3	100	11	93	61	7	70	35	67	72	3.77	0.0	11	4,569	e.	36	ne.	3	10	13	7	5.1	82.7	1884	78.0	1879
Ohio Val. & Tenn.						71.3	+ 2.6										1.54	— 1.8														
Chattanooga	783	13	29.35	30.17	+ .08	72.2	+ 1.0	91	24	83	54	15	61	31	62	79	2.06	— 2.4	8	2,582	ne.	17	se.	27	13	12	5	4.3	74.6	1881	67.6	*
Knoxville	980	21	29.15	30.18	+ .08	71.1	+ 1.2	90	24	82	52	15	60	30	60	75	1.59	— 1.5	6	2,334	e.	16	s.	28	20	7	3	2.9	74.1	1881	65.4	1875
Memphis	330	21	29.78	30.13	+ .06	74.9	+ 2.5	95	24	86	53	5	64	33	63	74	0.59	— 2.8	2	3,685	n.	25	se.	10	24	2	4	2.3	76.9	1884	68.2	1871
Nashville	553	21	29.57	30.14	+ .08	72.1	+ 1.7	93	24	84	53	7	60	34	58	70	1.25	— 2.7	4	2,633	ne.	16	nw.	29	18	7	5	3.6	75.6	1881	67.7	1880
Lexington	.....	7	29.05	.....	.....	71.7	.....	91	21	82	50	30	62	28	58	68	1.20	.....	4	5,856	sw.	24	nw.	29	21	5	4	3.6	71.7	1891	62.8	1888
Louisville	551	20	29.58	30.16	+ .08	71.8	+ 2.4	92	23	83	51	30	60	31	56	63	1.99	— 1.0	6	3,047	ne.	23	w.	29	18	8	4	3.3	75.9	1881	64.0	1879
Indianapolis	766	21	29.34	30.15	+ .08	70.6	+ 5.4	93	19	82	48	30	59	29	54	64	0.74	— 2.2	4	3,214	s.	24	sw.	29	18	8	4	3.6	73.5	1881	61.7	1879
Cincinnati	628	21	29.49	30.16	+ .09	70.0	+ 1.8	90	19	81	50	9	59	29	59	74	2.65	+ 0.3	7	2,533	n.	26	w.	28	21	7	2	2.8	76.1	1881	63.7	1879
Columbus	837	14	29.27	30.15	+ .09	69.4	+ 4.2	92	21	81	45	9	58	31	55	66	1.05	— 1.8	6	3,688	s.	26	s.	29	21	5	4	2.7	73.7	1881	61.3	1888
Pittsburg	847	21	29.27	30.16	+ .08	69.4	+ 3.2	90	21	80	46	9	59	29	59	76	1.90	— 0.7	7	2,785	sw.	38	sw.	3	15	10	5	4.0	75.4	1881	59.3	1871
Parkersburgh	638	4	29.50	30.18	.....	69.0	.....	92	18	81	46	9	57	35	59	80	1.72	.....	6	2,177	s.	18	w.	29	15	12	3	3.3	69.0	1891	61.9	1888
Lower Lake Region.						67.0	+ 1.5										1.57	— 1.6														
Buffalo	090	21	29.38	30.12	+ .07	65.2	+ 4.1	82	28	73	46	30	57	26	53	72	1.79	— 1.6	9	6,106	sw.	38	sw.	3	20	7	3	3.1	71.3	1881	57.5	1883
Oswego	335	21	29.75	30.11	+ .05	64.4	+ 3.7	88	25	72	46	9	57	34	55	76	1.28	— 1.6	7	6,159	s.	30	w.	29	14	10	6	3.5	70.3	1881	57.5	1883
Rochester	523	20	29.58	30.13	+ .08	66.0	+ 4.8	90	25	76	44	9	56	34	56	75	1.41	— 1.0	8	4,848	sw.	36	sw.	29	17	9	4	3.4	71.2	1881	56.2	1871
Erie	714	19	29.37	30.13	+ .07	65.8	+ 2.9	85	17	73	48	11	59	25	57	74	2.82	— 1.3	11	5,731	s.	31	s.	15	14	9	7	4.6	71.7	1881	58.8	1883
Cleveland	751	21	29.35	30.14	+ .07	67.5	+ 4.6	92	17	76	47	9	59	30	57	74	2.01	— 1.8	5	4,963	s.	28	s.	15	17	11	2	3.4	71.7	1881	59.5	1883
Sandusky	629	15	29.47	30.14	+ .08	70.1	+ 5.9	95	17	80	49	9	60	33	56	67	1.10	— 2.0	6	5,334	se.	27	nw.	29	15	12	3	3.7	72.5	1881	60.4	1879
Toledo	674	21	29.45	30.17	+ .12	69.0	+ 5.8	92	24	79	46	8	59	29	56	70	0.84	— 1.7	5	5,935	w.	29	w.	15	22	5	3	3.0	72.1	1881	59.8	1871
Detroit	724	21	29.37	30.13	+ .07	67.8	+ 5.4	93	25	77	47	8	58	26	55	72	1.33	— 1.3	4	6,225	sw.	34	nw.	18	18	11	1	3.4	72.3	1881	58.2	*
Upper Lake Region.						64.3	+ 5.8										1.62	— 2.1														
Alpena	609	20	29.44	30.10	+ .09	61.8	+ 5.6	91	24	71	37	30	53	29	55	84	1.79	— 2.3	6	5,943	nw.	36	sw.	12	16	8	6	4.1	62.4	1881	52.8	1883
Escanaba	.....	21	.....	.....	.....	62.4	+ 5.8	86	20	72	38	4	53	28	.....	.....	1.15	— 2.9	9	.....	s.	....	.....	...	15	7	8	....	62.4	1891	52.0	1873
Grand Haven	628	21	29.44	30.10	+ .07	64.3	+ 4.9	85	19	74	41	30	55	30	54	74	0.89	— 2.8	6	6,213	s.	35	sw.	28	23	3	4	2.1	67.4	1881	55.2	1888
Manistee	615	4	29.44	30.09	.....	63.4	.....	89	24	72	40	30	55	34	54	76	2.40	.....	6	5,421	sw.	40	w.	29	23	4	3	2.4	63.4	1891	54.4	1888
Marquette	734	21	29.22	30.00	+ .01	63.2	+ 7.8	91	24	72	43	30	55	29	53	75	1.21	— 3.2	10	8,195	sw.	42	s.	30	11	13	6	4.9	63.2	1891	52.2	1873
Port Huron	639	18	29.47	30.16	+ .12	65.0	+ 4.8	90	25	75	43	9	55	28	55	78	3.28	+ 0.9	11	6,698	s.	36	w.	18	15	13	2	4.2	68.4	1881	55.6	1879
Sault de Ste. Marie	642	4	29.37	30.06	.....	59.2	.....	87	24	69	36	30	49	33	51	81	0.98	.....	10	5,794	se.	41	nw.	29	5	11	14	6.5	59.2	1891	52.6	1888
Chicago	824	21	29.25	30.11	+ .07	69.0	+ 5.5	91	24	76	48	29	62	27	55	66	0.32	— 2.6	4	10,184	sw.	40	sw.	28	20	9	1	2.2	69.5	1881	59.8	1888
Milwaukee	673	21	29.36	30.10	+ .06	67.2	+ 6.2	93	16	76	43	4	58	35	55	70	0.18	— 2.8	2	7,055	sw.	36	w.	28	17	13	0	3.1	67.2	1891	56.9	1583
Green Bay	617	6	29.42	30.09	.....	66.0	.....	92	*	77	40	5	55	41	53	70	0.60	.....	5	5,421	s.	36	sw.	28	8	17	5	5.1	66.0	1891	57.0	1888

Table of miscellaneous meteorological data for September, 1891—Weather Bureau observations—Continued.

Districts and stations.	Elevation above sea-level, feet.	Length of record, years.	Pressure, in inches.			Temperature of the air, in degrees Fahrenheit.									Humidity and precipitation.					Wind.					Cloudless days.	Partly cloudy days.	Cloudy days.	Average cloudiness, tenths.	Mean temperature data since opening of station.				
			Mean pressure, 8 a. m. and 8 p. m. + 2.	Mean reduced.	Departure from normal.	Mean max. and min. + 2.	Departure from normal.	Maximum.	Date.	Mean maximum.	Minimum.	Date.	Mean minimum.	Greatest daily range.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches.	Departure from normal.	Days with .01 or more.	Total movement, miles.	Prevailing direction.	Maximum velocity. Miles per hour.	Maximum velocity. Direction.	Maximum velocity. Date.					Highest for month.	Year.	Lowest for month.	Year.
Up. Lake Reg.—Con.																																
Duluth	656	21	29.29	29.99	+ .01	61.6	+ 6.2	90	17	70	42	3	53	34	51	74	3.31	— 0.9	9	3,827	nw.	35	w.	28	14	5	11	4.8	61.6	1891	50.6	1886
Extreme Northwest.						60.2	+ 5.4										1.86	+ 0.1														
Moorhead	935	11	28.93	29.93	— .03	62.0	+ 8.6	92	21	74	32	3	50	44	49	72	3.50	+ 1.1	12	8,570	s.	54	sw.	19	14	5	11	4.3	62.0	1891	53.2	1881
Saint Vincent	804	12	29.00	29.91	— .04	58.2	+ 4.8	88	19	71	29	29	46	47	.....	.....	2.43	— 0.1	9	6,796	nw.	41	se.	30	...	...	...	5.2	58.2	1891	50.4	1886
Bismarck	1,698	17	28.13	29.91	— .04	61.8	+ 5.2	92	20	75	32	29	48	45	45	64	0.87	— 0.3	7	6,981	nw.	40	se.	29	11	13	6	4.8	61.8	1891	52.8	1881
Fort Buford	1,899	13	27.94	29.94	— .01	58.6	+ 2.7	87	18	72	36	25	45	43	43	63	0.66	— 0.2	5	5,406	nw.	36	n.	1	12	12	6	4.4	59.4	1888	51.4	1881
Upper Miss. Valley.						69.2	+ 5.4										1.00	— 2.5														
Minneapolis	.....	....	.....	.....	.....	67.6	.....	93	18	79	42	3	56	36	.....	.....	1.75	.....	6	.....	s.	....	.....	...	17	7	6	...	.....	.....	.....	.....
Red Wing	758	....	29.22	30.02	.....	67.0	.....	93	16	78	40	29	56	36	53	65	1.13	.....	7	6,685	se.	37	nw.	28	15	11	4	3.9	.....	.....	.....	.....
Saint Paul	850	21	29.13	30.03	+ .06	65.6	+ 5.9	92	18	77	39	29	54	37	53	69	0.58	— 2.6	6	4,870	se.	29	se.	30	10	12	8	5.0	65.6	1891	53.7	1873
La Crosse	720	19	29.32	30.08	+ .07	67.4	+ 7.0	93	18	79	37	4	55	38	55	71	1.77	— 2.9	4	3,877	s.	27	w.	28	16	10	4	4.1	67.4	1891	56.6	1873
Davenport	613	20	29.48	30.12	+ .08	69.7	+ 5.5	91	23	80	44	29	59	28	55	67	1.50	— 1.8	4	4,912	sw.	34	nw.	28	22	7	1	2.1	69.8	1881	60.5	1879
Des Moines	869	14	29.17	30.08	+ .07	68.2	+ 4.8	90	22	80	39	29	57	32	55	68	1.64	— 1.9	5	5,766	n.	34	w.	14	19	7	4	3.0	68.2	1891	59.4	1883
Dubuque	651	19	29.41	30.11	+ .06	69.3	+ 6.9	94	21	81	40	4	58	33	56	71	0.68	— 3.8	3	2,947	s.	24	nw.	28	15	13	2	3.6	69.3	1891	58.7	1873
Keokuk	613	21	29.46	30.11	+ .06	70.8	+ 5.4	92	22	82	45	4	60	30	56	68	0.49	— 3.2	4	3,383	sw.	25	nw.	28	20	10	0	2.3	72.4	1881	62.7	*
Cairo	359	21	29.77	30.15	+ .10	72.8	+ 3.1	93	24	83	52	30	62	33	62	75	0.29	— 2.3	1	3,712	nw.	36	n.	29	23	3	4	2.4	75.1	1881	66.5	1890
Springfield, Ill.	644	13	29.45	30.13	+ .07	70.8	+ 5.1	94	25	83	44	30	59	31	54	63	1.38	— 2.1	2	5,955	s.	28	w.	28	22	4	4	2.5	72.1	1881	62.5	1879
Saint Louis	571	21	29.54	30.14	+ .09	74.0	+ 4.8	94	24	84	51	4	64	27	56	61	1.43	— 1.9	4	6,107	sw.	45	sw.	28	24	4	2	2.1	75.3	1881	64.9	1879
Missouri Valley.						69.0	+ 5.2										0.73	— 1.8														
Columbia	.....	.....	.....	.....	.....	71.6	.....	96	22	87	38	4	56	42	.....	.....	0.46	.....	3	3,816	sw.	20	s.	15	19	7	4	.....	.....	.....	.....	.....
Kansas City	963	4	29.09	30.09	.....	71.6	.....	91	20	82	46	29	61	27	57	69	0.36	.....	4	5,812	se.	25	s.	14	17	7	6	3.5	71.6	1891	63.2	1890
Springfield, Mo.	1,356	5	28.71	30.11	.....	71.4	.....	90	*	82	44	4	60	29	56	67	1.29	.....	4	4,233	se.	22	n.	3	16	11	3	3.2	71.4	1891	63.4	1890
Leavenworth	842	21	29.22	30.10	+ .08	70.8	+ 3.4	92	15	82	41	29	60	32	58	70	0.57	— 3.0	5	4,204	s.	24	s.	17	17	8	5	3.9	71.7	1884	63.4	1883
Topeka	.....	5	.....	.....	.....	70.7	.....	94	15	85	34	29	57	43	.....	.....	1.00	.....	5	.....	s.	.....	.....	...	15	12	3	....	70.7	1891	63.2	1889
Omaha	1,113	21	28.91	30.08	+ .05	70.0	+ 5.6	91	18	80	43	29	60	28	55	66	1.76	— 1.4	9	5,823	s.	26	s.	30	13	10	7	5.2	70.0	1891	60.4	1873
Crete	.....	5	.....	.....	.....	69.5	.....	92	15	81	39	29	58	33	.....	.....	1.83	.....	9	.....	s.	.....	.....	...	15	10	5	....	69.5	1891	63.0	1889
Valentine	2,613	7	27.30	29.97	.....	65.1	+ 4.7	95	15	78	37	25	52	43	50	65	0.40	— 1.0	5	8,406	s.	48	s.	29	15	10	5	4.4	65.1	1891	58.4	1889
Sioux City	1,158	....	28.80	30.02	.....	68.0	.....	92	1	79	38	29	57	43	55	70	0.91	.....	5	9,006	s.	50	s.	30	12	9	9	4.7	.....	.....	.....	.....
Pierre	1,470	....	28.37	29.90	.....	68.4	.....	101	16	82	36	3	55	49	48	56	0.70	.....	6	6,951	se.	38	nw.	29	12	11	7	4.8	.....	.....	.....	.....
Huron	1,310	11	28.56	29.94	— .06	66.0	+ 6.9	96	18	80	30	29	52	50	49	64	0.47	— 1.1	7	12,127	se.	63	se.	29	13	12	5	3.9	66.0	1891	55.5	1881
Yanktone	1,232	19	28.69	29.98	.00	68.3	+ 5.4	92	20	80	38	29	57	36	56	72	0.36	— 2.3	4	7,685	s.	48	se.	30	8	12	7	5.3	68.3	1891	58.7	1876
Northern Slope.						69.0	+ 5.4										1.14	0.0														
Fort Assiniboine	2,690	12	27.13	29.92	— .04	57.6	+ 3.0	84	9	70	32	28	45	39	40	59	0.87	— 0.3	4	7,856	sw.	44	w.	27	11	12	7	4.8	61.0	1888	50.2	1884
Custer Station†	2,733	....	27.10	29.91	.....	61.2	.....	90	3	76	34	28	46	54	41	41	1.02	.....	7	4,376	e.	60	ne.	1	7	16	7	5.1	....	.....	.....	.....
Helena	4,118	12	25.81	29.96	— .03	57.6	+ 1.0	82	5	68	30	30	47	33	34	47	0.72	— 0.4	9	4,969	sw.	36	sw.	6	10	6	14	5.7	62.6	1888	49.7	1884
Rapid City	3,280	6	26.61	29.91	.....	64.4	.....	94	16	78	38	29	51	48	41	51	1.32	.....	9	6,475	sw.	38	nw.	23	11	16	3	4.6	64.4	1891	58.2	1889
Cheyenne	6,105	21	24.10	30.01	+ .04	59.0	+ 2.3	86	16	73	32	24	45	40	35	57	2.09	+ 1.2	13	6,212	nw.	37	nw.	10	9	18	3	4.4	59.0	1891	51.8	1878
Fort McKinney†	5,000	4	25.06	29.96	.....	60.0	.....	85	*	72	33	23	48	41	44	58	0.68	.....	*	6,849	n.	48	n.	1	13	9	*	4.7	61.8	1888	55.2	1889
North Platte	2,841	17	27.12	30.03	+ .03	65.8	+ 3.4	94	*	79	38	3	53	42	51	70	0.87	— 0.7	8	7,002	se.	36	s.	29	13	11	6	4.3	65.8	1891	59.8	1889
Lander	5,377	....	24.69	30.00	.....	50.7	.....	85	3	73	29	25	40	51	35	54	0.77	.....	5	3,577	s.	42	sw.	29	11	15	4	4.4	.....	.....	.....	.....
Middle Slope.						67.7	+ 2.5										2.81	+ 1.3														
Denver	5,287	20	24.82	29.98	+ .02	64.2	+ 2.8	91	16	78	37	24	51	42	37	47	0.73	— 0.1	12	4,738	sw.	30	n.	1	11	15	4	4.6	64.6	1884	58.5	1878
Pueblo	4,734	4	25.33	29.98	.....	66.0	.....	94	1	81	37	29	51	48	37	43	0.54	.....	6	4,701	nw.	35	e.	11	11	10	9	4.6	66.0	1891	62.6	1889
Concordia	1,410	7	28.60	30.05	.....	70.6	+ 3.7	94	15	82	38	29	59	36	56	70	3.14	+ 0.6	5	6,266	s.	36	s.	30	18	11	1	2.9	70.6	1891	64.0	1889
Dodge City	2,523	17	27.46	30.03	+ .04	68.4	+ 1.0	93	18	80	39	3	57	35	54	70	4.56	+ 3.4	9	10,433	s.	45	s.	30	14	11	5	4.0	70.3	1884	63.1	1883
Wichita	1,366	4	28.64	30.06	.....	71.4	.....	92	15	82	42	29	60	31	57	69	0.72	.....	5	6,221	s.	28	s.	17	17	9	4	3.0	71.4	1891	66.2	1890
Oklahoma City	1,239	....	28.80	30.09	.....	72.4	.....	89	1	83	46	4	62	35	61	75	5.43	.....	7	5,514	se.	38	n.	2	16	7	7	3.4	....	.....	.....	.....
Southern Slope.																	1.17	— 1.4														
Fort Sill	1,200	15	28.83	30.07	+ .06	74.2	+ 2.3	94	11	87	49	4	62	35	62	78	1.01	— 2.0	11	6,813	s.	46	s.	8	9	15	6	4.8	77.6	1884	68.6	1889
Abilene	1,748	6	28.26	30.05	.....	75.7	.....	95	11	86	51	4	66	31	59	67	0.64	.....	4	7,333	se.	36	ne.	28	11	14	5	4.3	75.9	1887	69.8	1889
Fort Stanton	6,152	8	24.06	29.97	.....	63.0	.....	86	10	76	40	28	50	35	44	60	1.33	— 0.9	8	3,803	sw.	30	sw.	26	9	16	5	5.1	63.0	1891	54.4	1884
Southern Plateau.						74.1	+ 1.7										1.22	+ 0.6														
El Paso	3,796	14	26.22	29.92	— .05	77.2	+ 3.8	98	12	89	55	*	65	34	44	40	0.23	— 1.1	7	4,985	se.	37	ne.	2	16	13	1	3.2	77.9	1878	69.1	1882
Santa Fé	7,026	18	23.41	30.07	+ .03	61.8	+ 2.1	82	10	72	38	27	51	30	41	56	4.69	+ 3.3	13	5,100	se.	40	nw.	23	17	10	3	3.9	63.0	1888	56.8	1880
Yuma	141	16	29.71	29.85	+ .04	83.4	— 0.8	110	*	99	54	25	68	44	51	40	T.	— 0.2	0	4,288	w.	35	nw.	30	27	1	2	1.2	89.2	1888	80.0	1884
Keeler	3,622	7	26.27	29.83	.....	71.0	.....	98	1	83	43	30	59	33	43	38	0.19	+ 0.2	4	6,098	s.	49	sw.	15	19	5	6	3.1	78.3	1888	71.0	1891
Middle Plateau.						62.5	+ 0.7										1.34	0.0														
Carson City	.....	4	25.34	.....	.....	58.2	.....	86	2	72	31	25	45	42	39	51	0.88	.....	4	.....	.....	.....	.....	...	17	4	9	3.9	65.6	1888	58.2	1891
Winnemucca	4,340	13	25.65	29.97	+ .02	60.4	+ 0.4	92	2	74	30	24	47	40	28	36	0.81	+ 0.5	7	6,304	sw.	42	sw.	5	11	13	6	4.4	66.6	1888	56.4	1881
Fort Du Chesne	4,900	....	25.12	29.97	.....	66.0	.....	90	1	84	44	*	48	42	37	44	0.62	.....	6	2,045	nw.	38	sw.	16	7	5	4	4.3	....	.....	.....	.....
Salt Lake City	4,345	18	25.64	29.94	— .02	65.0	+ 1.1	89	3	76	38	30	54	31	44	50	1.19	+ 0.4	9	4,860	se.	38	sw.	29	15	7	8	4.4	70.6	1888	58.8	1884
Montrose	5,795	7	24.35	29.95	.....	62.0	+ 0.6	86	1	75	36	19	49	38	37	50	1.73	+ 0.9	9	4,072	s.	42	s.	30	18	5	7	3.6	65.0	1888	59.7	1886
Northern Plateau.																																
Baker City	3,430	....	26.44	29.92	.....	56.8	.....	90	5	70	28	28	43	45	38	54	0.14	.....	3	3,548	se.	24	nw.	30	13	7	10	4.7	....	.....	.....	.....
Spokane Falls	1,938	11	27.94	29.96	— .02	60.2	+ 2.3	89	5	72	36	20	48	39	34	45	0.66	— 0.4	7	4,186	sw.	36	sw.	22	9	12	9	5.0	64.6	1888	52.5	1884
Walla Walla	1,018	6	28.91	29.99	.....	64.4	.....	90	2	76	41	30	53	36	40	46	0.41	.....	4	3,708	s.	24	sw.	22	13	14	3	3.9	69.2	1888	61.2	1887
N. Pac. Coast Region.						57.9	— 0.5										1.63	+ 1.6														
Fort Canby	179	9	29.82	30.01	+ .01	56.4	— 1.5	80	1	61	47	30	52	30	55	97	4.77	+ 1.4	18	9,051	s.	72	se.	28	9	3	18	6.7	60.0	1883	55.3	1884
Neah Bay	.....	....	.....	.....	.....	54.0	.....	70e	5	63e	38e	30	45e	26e	.....	.....	10.78	.....	9	.....	s.	.....	.....	...	68	60	e17	....	.....	.....	.....	.....
Olympia	36	15	29.97	30.01	— .03	56.8	— 0.1	76	1	66	40	30	48	34	51	85	3.65	+ 0.8	15	2,436	s.	19	sw.	28	6	4	20	7.0	60.6	1888	54.5	1878
Port Angeles	14	7	29.94	29.96	.....	53.6	.....	73	1	61	38	20	46	29	49	88	3.65	+ 1.2	14	1,876	s.	12	sw.	22	7	5	18	6.6	55.6	1888	51.0	1884
Tatoosh Island	86	8	29.89	29.98	— .01	53.5	— 0.8	67	2	58	45	6	49	17	52	94	11.00	+ 6.2	18	8,735	e.	49	e.	2	6	6	18	7.1	56.4	1888	51.2	1890
Astoria	.....	7	.....	.....	.....	59.0	.....	82	1	65	45	29	53	23	.....	.....	6.14	+ 1.2	17	.....	sw.	.....	.....	...	8	7	15	....	65.4	1888	56.9	1887
Portland	80	20	29.92	30.01	— .02	60.8	— 0.7	88	2	70	39	27	51	38	51	76	2.17	+ 0.4	14	3,542	s.	22	s.	18	8	12	10	5.5	60.0	1888	55.7	1884
Roseburgh	523	14	29.48	30.03	— .01	62.2	+ 1.5	91	6	74	38	28	51	38	49	69	0.95	+ 0.2	10	2,298	n.	21	sw.	29	8	14	8	5.0	66.3	1888	58.7	1878
Mid. Pac. Coast Reg.						68.2	— 0.1										0.35	0.0														
Eureka	64	5	29.97	30.03	.....	56.7	.....	70	7	62	43	30	51	20	52	88	1.45	.....	6	3,304	nw.	35	n.	23	8	14	8	5.3	57.4	1888	53.2	1890
Red Bluff	342	14	29.58	29.93	+ .01	73.0	— 0.2	107	1	85	48	30	61	33	47	45	0.19	— 0.4	6	5,461	nw.	32	nw.	29	22	7	1	2.3	80.2	1888	67.3	1884
Sacramento	64	15	29.85	29.92	— .02	69.8	— 0.1	100	5	83	50	4	56	44	50	56	0.10	— 0.2	3	5,026	sw.	33	nw.	30	21	9	0	2.9	75.4	1888	64.8	1884
San Francisco	109	21	29.85	29.97	+ .02	61.8	+ 0.1	86	25	66	51	10	55	26	53	80	0.77	+ 0.6	5	6,835	w.	29	w.	11	20	8	2	3.0	64.6	1889	58.3	*
Point Reyes Light	.....	....	.....	.....	.....	57.4	.....	81	25	63	47	5	52	27	.....	.....	0.53	.....	2	.....	nw.	.....	.....	...	10	11	9	....	.....	.....	.....	.....
S. Pac. Coast Region.						71.6	+ 2.6										0.07	0.0														
Fresno	338	5	29.53	29.89	.....	74.6	.....	104	2	89	51	30	60	39	44	41	0.27	.....	2	4,764	nw.	36	nw.	30	22	6	2	1.9	80.7	1888	74.6	*
Los Angeles	330	15	29 96	29.91	.00	73.0	+ 3.3	100	6	85	52	22	61	38	57	69	0.06	0.0	1	2,532	w.	20	nw.	30	17	13	0	2.2	73.8	1888	64.5	1880
San Diego	93	20	29.82	29.92	.00	70.2	+ 2.2	89	7	77	55	26	63	26	62	77	0.08	0.0	2	3,307	w.	24	s.	30	20	5	5	3.3	70.2	*	63.1	1880

NOTE.—The data at stations having no departures are not used in computing the district averages. Letters of the alphabet denote number of days missing from the record.
* Two or more directions, dates, or years. † Received too late to be considered in departures, etc.

Form Map C—1901.

Chart I. Tracks of Are

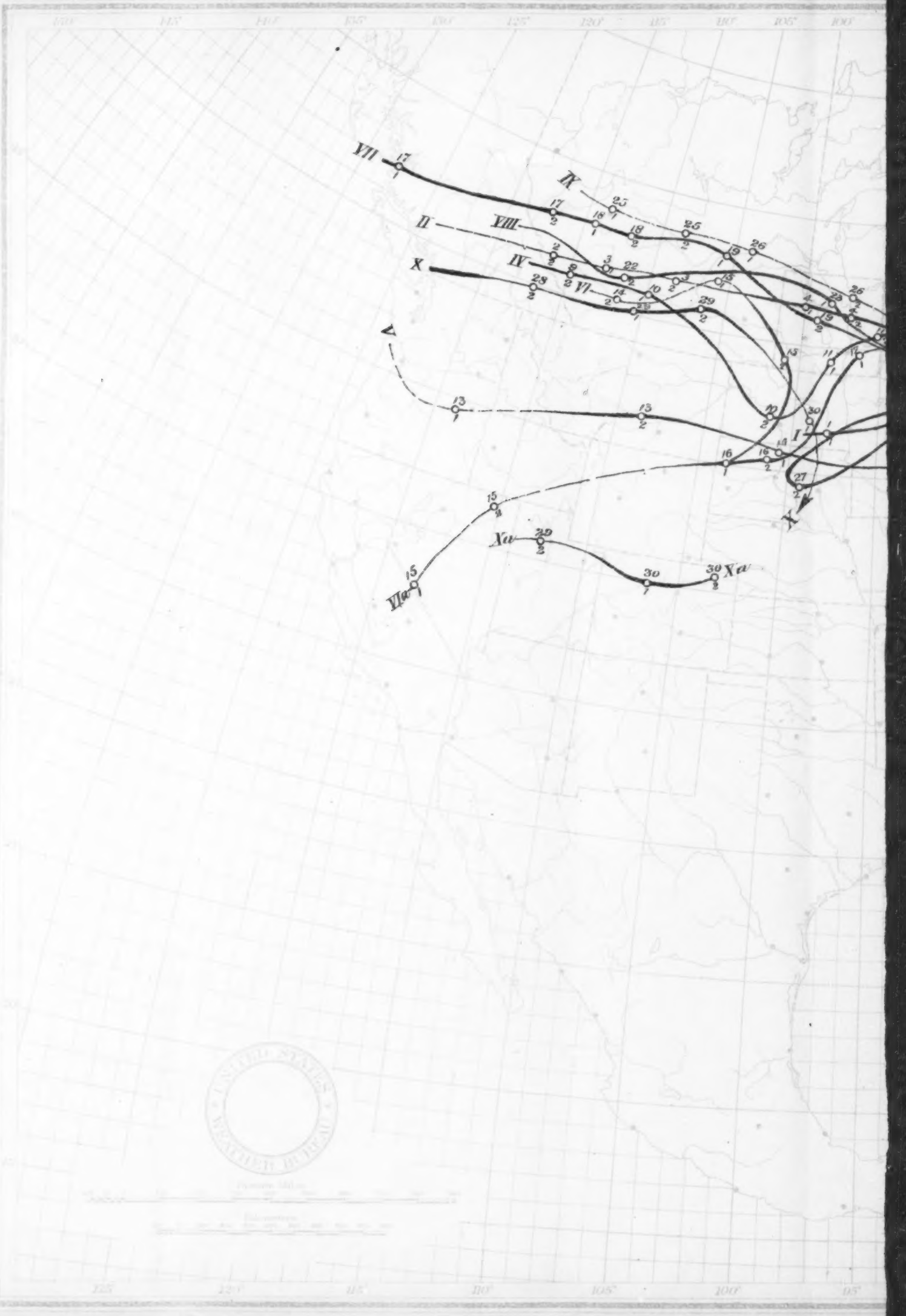
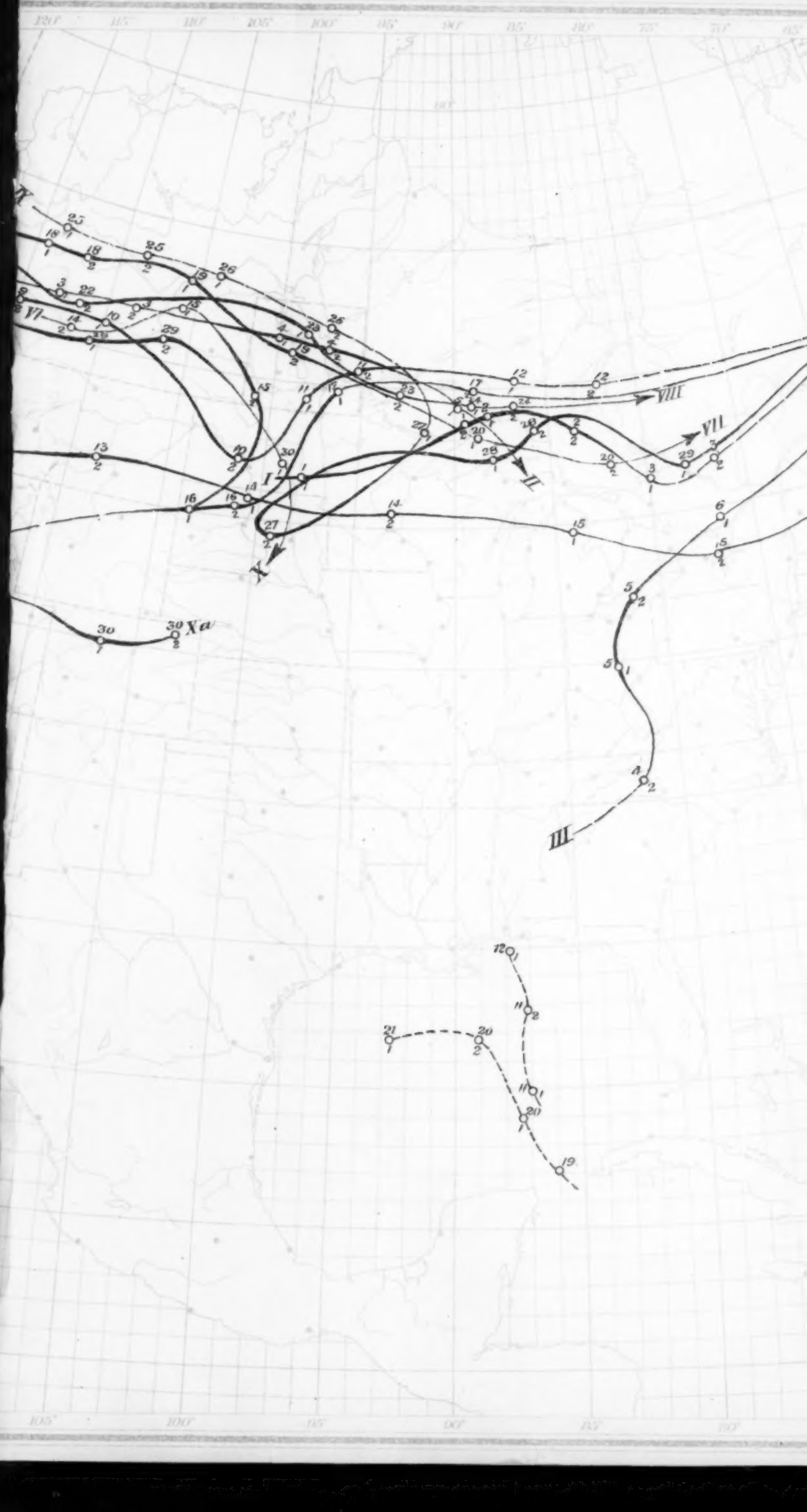
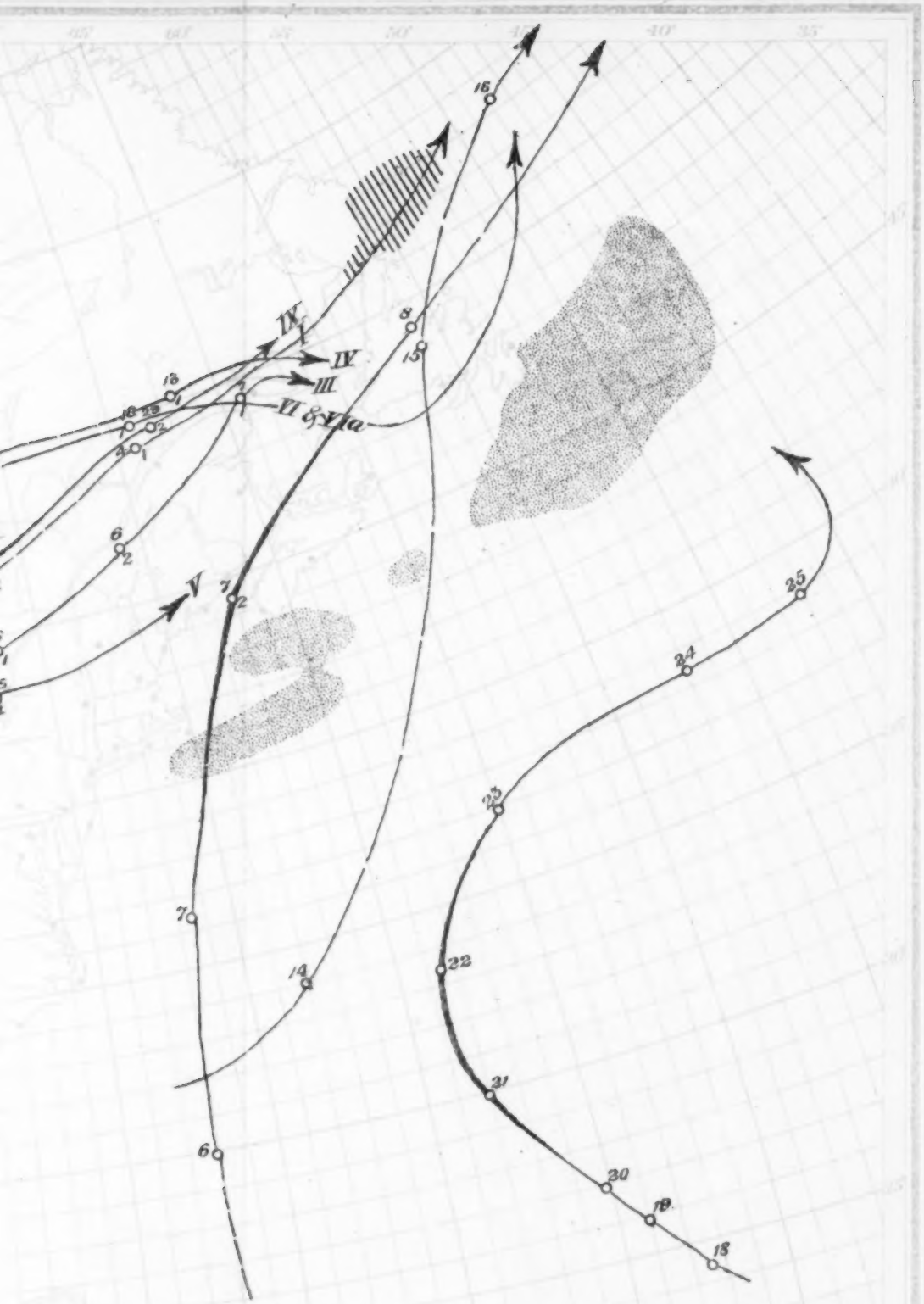


Chart I. Tracks of Areas of Low Pressure. September, 1891





NOTES.

The Roman letters show number and order of areas of low pressure. The figures above the lines show the days of the month, those below (1 and 2) indicate, respectively, the 8 a. m. and 8 p. m., 75th meridian time, observations. The heavy portion of tracks indicates where the greatest storm energy was displayed.

The dotted shading ( ) indicates fog belts.

The ruled shading ( ) indicates the position in which field-ice or icebergs were observed.

Form 101 F

Chart II. Isobars, Isotherms, and Winds, September, 1891.

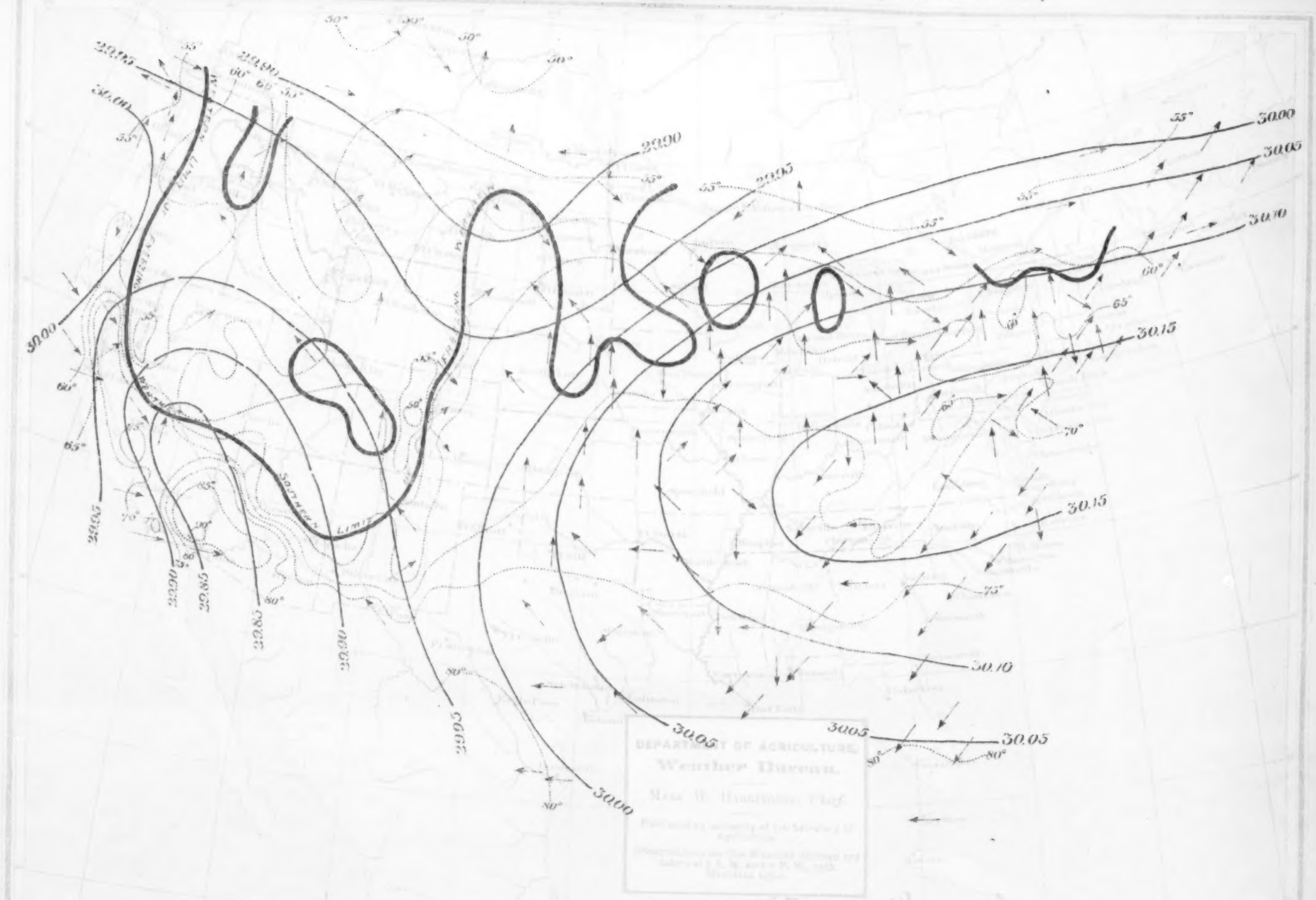
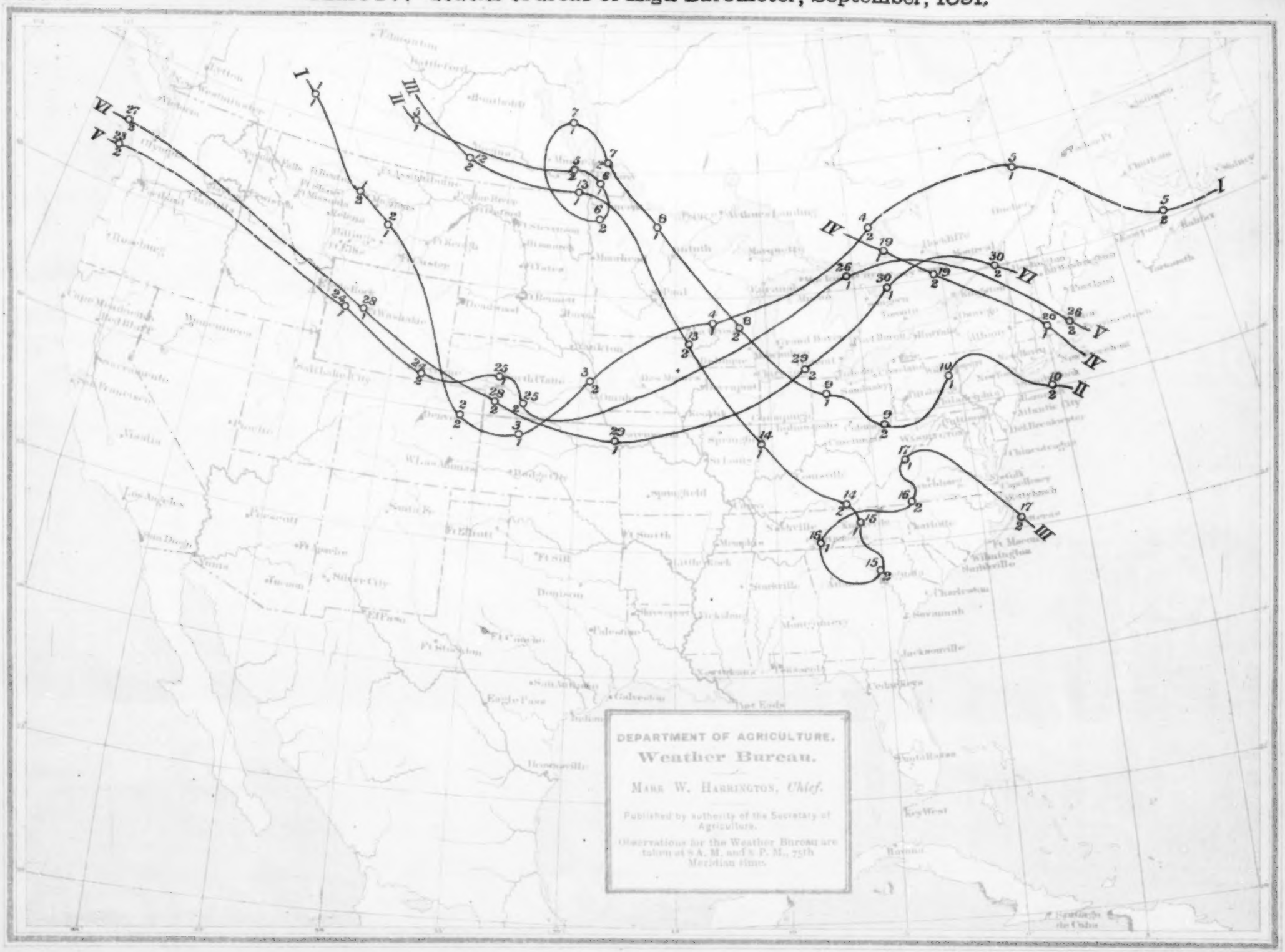


Chart III. Precipitation, September, 1891.

Form 1087 F

Chart IV. Tracks of areas of High Barometer, September, 1891.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Weather Bureau.
MARK W. HARRINGTON, Chief.
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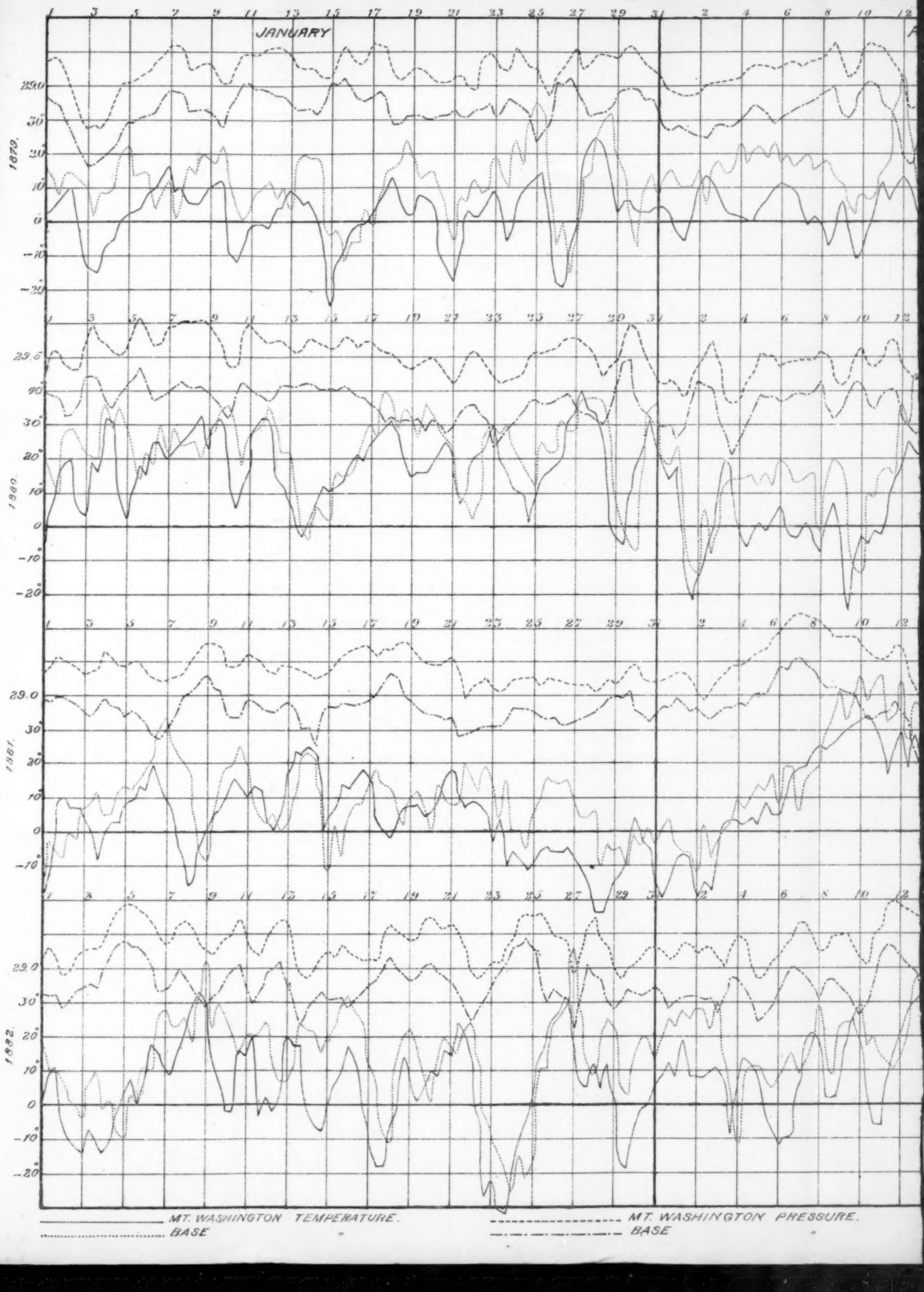
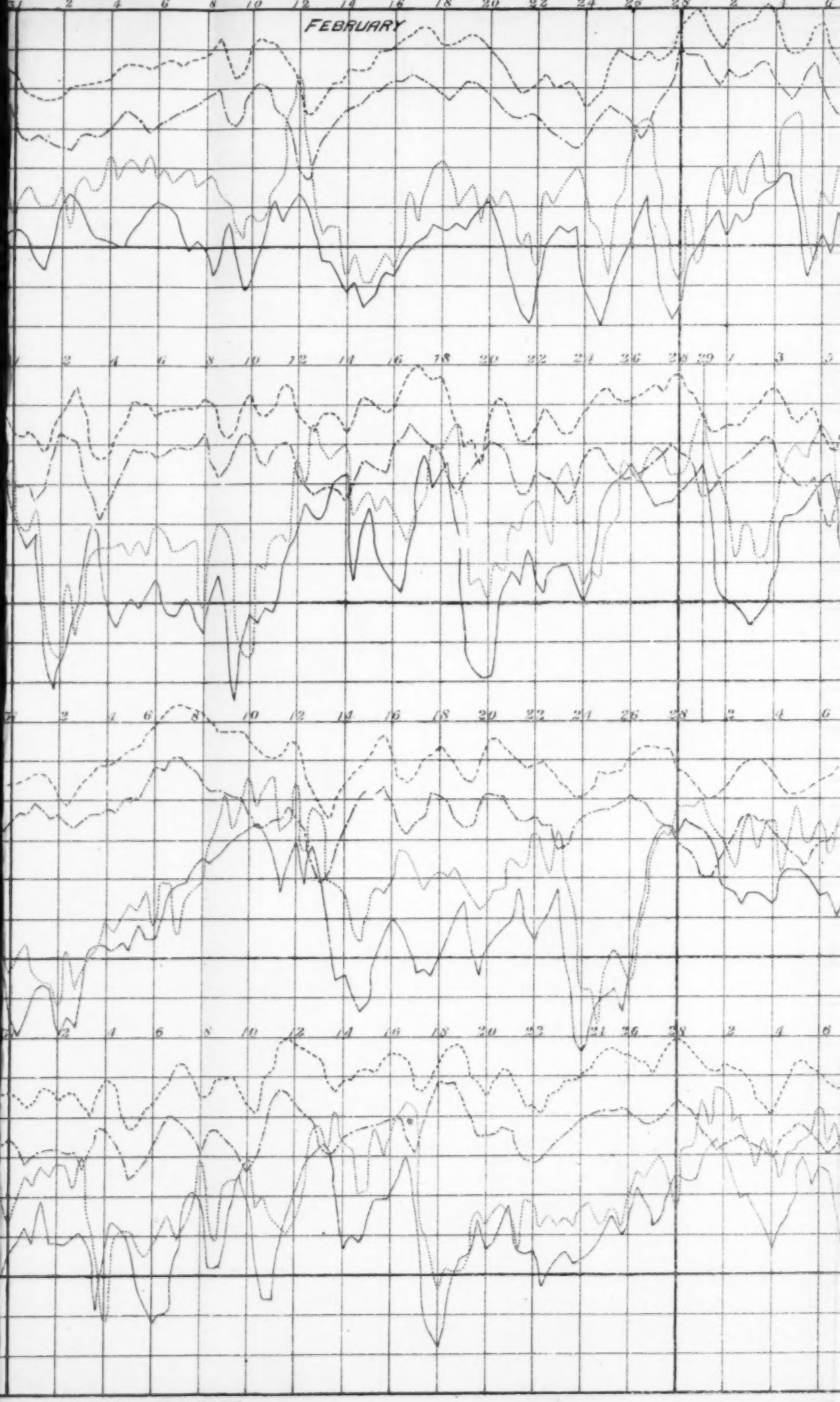
Observations for the Weather Bureau are taken at 8 A. M. and 8 P. M., 75th Meridian time.

Fluctuations of pressure and tempe



ressure and temperature near Mount Washington



T. WASHINGTON PRESSURE.
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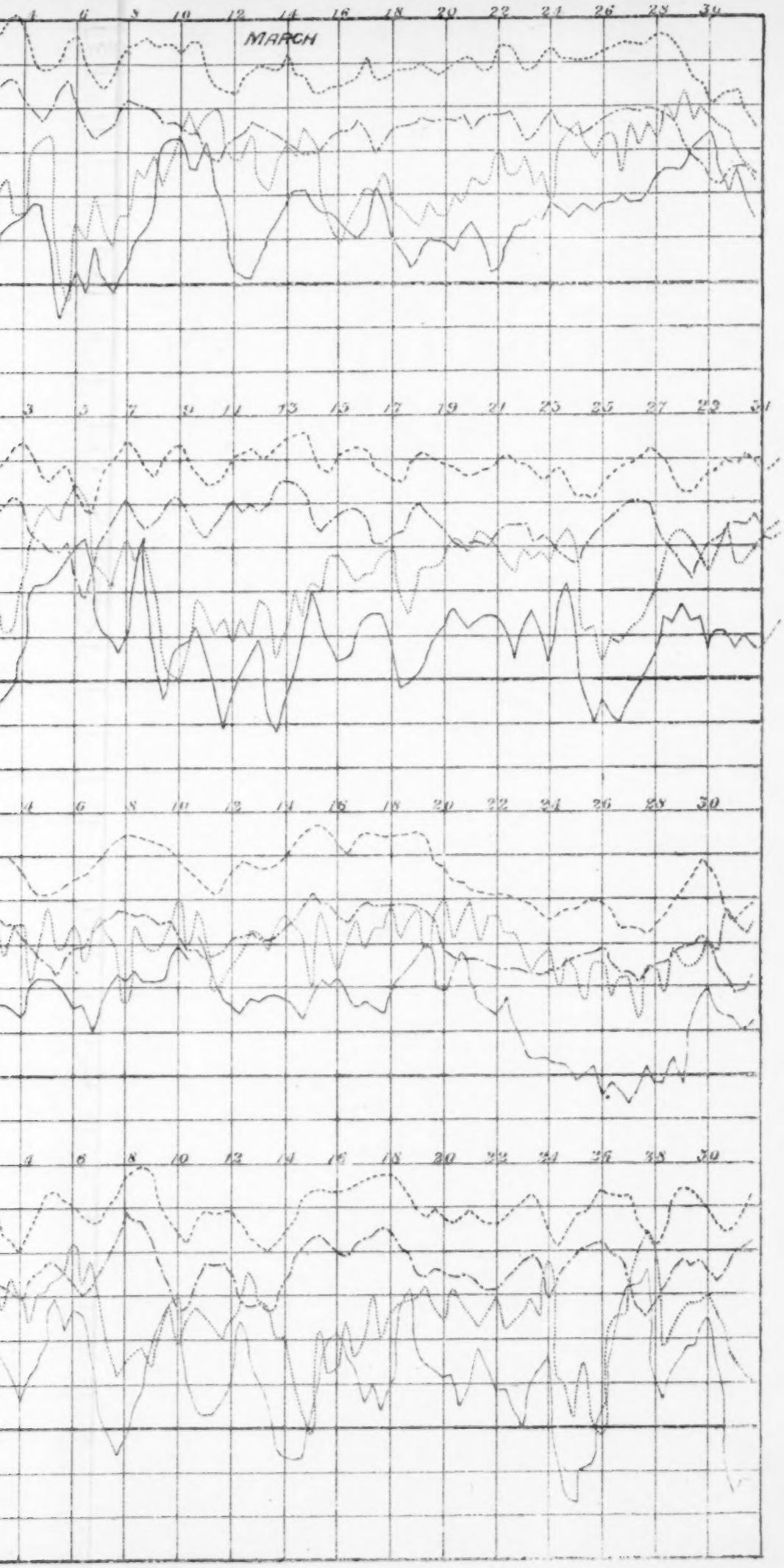
ngton, N. H.



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Cunningham Kans
J B Handy
Downs Kans
Wm Taylor
Dwight Kans
C W Gilman
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Elk Falls Kans
Agent U P R R
Ellis Kans
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C D Perry
Englewood Kans
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Eureka Ranch
Ellis Kans
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Fort Leavenworth Kans
Post Surgeon
Fort Riley Kans
Post Surgeon
Military Prison
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Fremont Kans
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Jesse Royer
Gove Kans
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Grainfield Kans
R M Lawyer
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Agent U P R R
Grinnell Kans
D C Ruth
Halstead Kans
L W Dennen
Havensville Kans
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C Bishir
Hutchison Kans
J M Altaffer
Independence Kans
Prof R Hay
Junction City Kans
Dr E R Heath
1115 Garfield Ave
Kansas City Kans
Jacob Wilson
Kellogg Kans
Dr W M Goodwin
La Crosse Kans
Isaac S Coe
La Harpe Kans
F R French
Lakin Kans
C E Poling
Larned Kans
Prof F H Snow
Lawrence Kans
C B Jennings
Lebo Kans
J F Chambers
Leoti Kans
J H Starke
Macksville Kans
C P Blachley
Manhattan Kans
E H Kern
Mankato Kans
C M Breese Agric'l Col
Manhattan Kans
A C Abbott
Marmaton Kans
Agent U P R R
McAllaster Kans
Ed F Haberlein
McPherson Kans
C I Hinman
Medicine Lodge Kans
J L Steel
Minneapolis Kans
Agent U P R R
Monument Kans
R P Edgington
Morse Kans
John A Gordon
Morton Kans
H C Williams
New England Ranch
Grainfield Kans
Agent U P R R
Oakley Kans
Agent U P R R
Ogallah Kans
D Doyle
Oswego Kans
Miss Maud Adams
Page Kans
W T Jackson
(Pauline) P O Box 247
Topeka Kans
F T M Dutcher
Phillipsburg Kans
Agent U P R R
Plainville Kans
N A Andress
Pleasant Dale Kans
Agent U P R R
Quinter Kans
D M Adams
Rome Kans
A P Collins
Salina Kans
S P Kane
Scott City Kans
J W Goodell
Sedan Kans
Dr S S Kaysbier
Seneca Kans
Agent U P R R
Sharon Springs Kans
W H Harvey
Shields Kans
H D McQuade
Stafford Kans
A A Denton
Sterling Kans
Prof J T Lovewell
Topeka Kans
T B Jennings
Topeka Kans
J W Tipton
Toronto Kans
C E Wightman
Tribune Kans
T W Marshall
Ulysses Kans
Agent U P R R
Wa Keeney Kans
W P Cochran
Wakefield Kans
Agent U P R R
Wallace Kans
J H Wolfe
Wellington Kans
Agent U P R R
Weskan Kans
S D Yoxall
Weskan Kans
Agt Union Pac R R
Winona Kans

Kentucky.

M H Crump
Bowling Green Ky
H B Bonar
Caddo Ky
C H Major
Canton Ky
W E Fowler
Central City Ky
J B Atkinson
Earlington Ky
Miss Lee Ray
Edmonton Ky
Commanding Officer
Fort Thomas Newport Ky
T W MacGill
Franklin Ky
Dr F L Harrod
Harrodsburgh Ky
V E Muncey
Lexington Ky
W S Page
Lexington Ky
Frank Burke
Louisville Ky
A H Martine
Middlesborough Ky
Post Surgeon
Newport Barracks
Newport Ky
Oscar Haynes
Pellville Ky
Wm Martindell
Princeton Ky
Prof O H Kennedy
Richmond Ky
H W Preissler
Shelbyville Ky
A B Gilbert
South Fork Ky
Rev Miles Saunders
Springfield Ky

Louisiana.

Dr G J Edwards
Abbeville La
Miss Grace Manard
Amite City La
Prof W C Stubbs
Sugar Ex Station
(Audubon Park)
New Orleans La
Prof H A Morgan
Baton Rouge La

Dr L D Chauff
Bonnet Carre La
Hon S P Henry
Cameron La
W W Wall
Cheneyville La
J A White Jr
Clinton La
Dr W V Taylor
Davis La
L D Martin
Edgard La
Rev Joseph A Raby S J
Grand Coteau La
D W Harris
Homer La
A F Chanfrau
Houma La
G W Whitworth
Jeanerette La
J J Davidson
La Fayette La
Dr Wm Meyer
Lake Charles La
A Werner
Lawrence La
Dr E A Crawford
Liberty Hill La
M R Bein
Luling La
Alex Band
Mandeville La
Hon L Molenar
Marksville La
R Benefield
Maurepas La
W S Hunter
Minden La
James S Cosgrove
Natchitoches La
Mrs J A Gebert
New Iberia La
G E Hunt
New Orleans La
Post Surgeon
Jackson Barracks
New Orleans La
J G Lee
North Louisiana Exp Sta'n
Ouachita La
Hon J E Le Blanc
Paincourtville La
P G Kleinpeter
Plaquemine La
E Dechamps Jr
Shell Beach La
Maj S T Grisamore
Thibodeaux La
T A Williams
West End La
Dr W M Guice
Winnsborough La

Maine.

Jos Wood
Bar Harbor Me
L H Murch
Belfast Me
C C Lovejoy
Bethel Me
Dr D E Seymour
Calais Me
Silas West
Cornish Me
Frank W Kingsley
East Machias Me
H M Mansfield
Fairfield Me
J M S Hunter
Farmington Me
Post Surgeon
Fort Preble Portland Me
Post Surgeon
Kennebec Arsenal
Augusta Me
Prof W C Strong
Kents Hill Me
Union Water Power Co
Lewiston Me
V P Hall
Mayfield Me
G L Upton
Millridge Me
Prof M C Fernald
Orono Me
C Hopkins
West Jonesport Me

Maryland.

A E Acworth
Barren Creek Springs Md
E T Shriver
Cumberland Md
H Shriver
Cumberland Md
Prof G G Curtis
Fallston Md
Post Surgeon
Fort McHenry
Baltimore Md
McClintock Young
Frederick Md
Jos Plummer
Jewell Md
Geo W Joy
Leonardtown Md
McDonogh Institute
McDonogh Md
Dr Howard H Hopkins
New Market Md
Mt St Mary College
Mt St Mary's Md
Dr C W Weaver
Taneytown Md
Woodstock College
Woodstock Md

Massachusetts.

F M Green
Adams Mass
Miss S C Snell
Amherst Mass
Hatch Experiment Station
Amherst Mass
Ag'l Experiment Station
Amherst Mass
A B Wiggin
Andover Mass
Post Surgeon
Fort Warren Boston Mass
Prof W H Niles
Boston Mass
Rev A K Teele (Blue Hill)
Milton Mass
Prof A L Rotch (Blue Hill)
Readville Mass
Desmond Fitz Gerald
Brookline Mass
Harvard College Observat'y
Cambridge Mass
E C Brooks (Cambridge)
Mt Auburn Mass
Prof W M Davis
Cambridge Mass
J Warren Smith
Cambridge Mass
F H Norton
Chicopee Mass
G W Weeks
Clinton Mass
F A Tower
Concord Mass
Gen J H Reid
Cotuit Mass
Jas Childs
Deerfield Mass
Conant Observatory
Dudley Mass
Geo E Lyon
(Egg Rock)
Nahant Mass
C V S Remington
Fall River Mass
O B Truesdell
Fiskdale Mass
Dr J Fisher
Fitchburg Mass
Dr A P Mason
Fitchburg Mass
Nelson Dupuy
Florida Mass
I E Baker
Florida Mass
Boston Water Works
Framingham Mass
Dr W E Brown
Gilbertville Mass
C Woolley
Groton Mass
B B Cutler
Heath Mass
A J Newman
Hoosac Tunnel Mass
Essex Company
Lawrence Mass
Leicester Academy
Leicester Mass
W B Hosmer
Leominster Mass
Prop Locks & Canals
Lowell Mass
F E Saunders
Lowell Mass
M W Graves
Ludlow Mass
J Haviland
Ludlow Mass
J C Haskell
Lynn Mass
W C Winter
Mansfield Mass
R M Gow
Medford Mass
Middleborough Water Wk's
Middleborough Mass
Dr G E Fuller
Monson Mass
Wm Street
(Mount Nonotuck)
Mount Tom Mass
Dr W D Hodges
Nahant Mass
T R Rodman
New Bedford Mass
New Bedford Water Works
New Bedford Mass
F V Pike
Newburyport Mass
Newburyport Water Works
Newburyport Mass
C H Kohlrausch Jr
North Billerica Mass
J M Clark
Northampton Mass
Miss L B Knapp
Plymouth Mass
Mrs E M West
Princeton Mass
J R Smith
Provincetown Mass
Mrs I D Page
Randolph Mass
Miss L W Chase
Royalston Mass
A A Smith
Salem Mass
M E Cain
Savoy Mass
Elisha Slade
Somerset Mass
H W Cushing
South Hingham Mass
Post Surgeon
National Armory
Springfield Mass
W K Lewis
Swampscott Mass
Hoffman Richardson
Swampscott Mass
Dr E U Jones
Taunton Mass
A F Sprague
Taunton Mass
Taunton Water Works
Taunton Mass
C H Wilmarth
Taunton Mass
Dr S W Abbott
Wakefield Mass
Boston Mf'g Co
Waltham Mass
Prof Sarah F Whiting
Wellesley Mass
G S Newcomb
Westborough Mass
Williams College Obsy
Williamstown Mass
L R Symmes
Winchester Mass

Michigan.

W H Howard
Adrian Mich
Prof C E Barr
Albion Mich
G W Grigsby
Allegan Mich
P M Smith
Alma Mich
J W Glover
Ann Arbor Mich
Wm Atkin (Arbela)
Millington Mich
H Obenhoff
Atlantic Mine Mich
F N Hilton (Ball Mt)
Pontiac Mich
H D Burrell
Bangor Mich
Mrs Ida McDiarmid
Bear Lake Mich
R O Gould (Berlin)
Smith Mich
C W Cornwall
Bell Branch Mich
C Leavitt
Bellaire Mich
Dr H V Tutton
Benton Harbor Mich
J W Vaudeman
Benzonia Mich
F A Zerby
Berrien Springs Mich
W J Jones
Berrien Springs Mich
D B Alger
Birch Run Mich
S Alexander
Birmingham Mich
David Straehly (Bronson)
Burr Oak Mich
E S Grierson
Calumet Mich
E H Green
Charlevoix Mich
Jacob Walton
Cheboygan Mich
D Woodward
Clinton Mich
G W Teller
Colon Mich
A M Shotwell
Concord Mich
Rev W T Woodhouse
Corunna Mich
C W Brown
Crystal Falls Mich
Dr N D Yale
Deerfield Mich
N B Conger
Detroit Mich
Post Surgeon
Fort Wayne Detroit Mich
J W Chapin
Eden Mich
Mrs H A Hepburn
Evart Mich
L D Watkins
Fairview Mich
M Conklin
Fitchburgh Mich
W L Fisher
Flint Mich
Post Surgeon Ft Brady
Sault de Ste Marie Mich
Post Surgeon
Fort Mackinac
Mackinac Id Mich
C I Rathbun
Fremont Mich
J H Scott
Gaylord Mich
J W Morris
Grape Mich
Dr O Palmer
Grayling Mich
L B Smith
Hanover Mich
E S Shaw
Harbor Springs Mich
F H Edwards
Hart Mich
Dr F R Timmerman
Hastings Mich
C F Leipprandt
Hayes Mich
A D DeGarmo
Highland Station Mich
C W Cain
Hillman Mich
E B Rodgers
Hillsdale Mich
J B Thorburn
Holt Mich
F W Munson
Howell Mich
A H Boies
Hudson Mich
O L Giddings
Ivan Mich
J A Rath
Jackson Mich
W Bice
Jeddo Mich
W A Black
Kalamazoo Mich
Dr H B Baker
Sec State Board of Health
Lansing Mich
A Lathrop
Lathrop Mich
H C Bradish (Madison)
Adrian Mich
Dr G H Green
Marshall Mich
N Cody
Mayville Mich
G A Whitbeck
Montague Mich
Jas White (Caldwell)
Manton Mich
J A Hartzler
Mottville Mich
E B Bushnell
Noble Mich
H Wilson
North Aurelius Mich
P Mayo
(North Marshall)
Battle Creek Mich
Olivet College
Olivet Mich
C H Prentiss
Otsego Mich
W H Faxon
Ovid Mich
L Marvill
Parkville Mich
J C Gould
Paw Paw Mich
H M Warren
Pontiac Mich
J W Hutchins
Pulaski Mich
L R Brown
Rawsonville Mich

Dr W C Gates
Rockland Mich
A O Hunt
St John's Mich
Rev J Ferris
St Ignace Mich
W E Nims
Sand Beach Mich
J J Decker
Standish Mich
M W Chapin
Stanton Mich
C H Force
Stockbridge Mich
Dr J S Caulkins
Thornville Mich
A Smith
Vandalia Mich
M M McCormack
Vienna Mich
V W Eaton
(Washington)
Romeo Mich
J J Gilding
Weldon Creek Mich
W H Middagh
White Pigeon Mich
J H Forster
Williamston Mich
J C Bemiss
Ypsilanti Mich

Minnesota.

C E Crane
Alma City Minn
John Ross
Crookston Minn
D F Akin
Farmington Minn
Post Surgeon
Fort Snelling Minn
C F Greening
Grand Meadow Minn
John Ellingson
(Leach Lake)
Grand Rapids Minn
Miss Clarrie Tanner
Kinbrae Minn
Hans Olson
(Lake Winnibigoshish Dam)
Grand Rapids Minn
L B Davis
Le Sueur Minn
U O Cox
Mankato Minn
J H Harmon
Minneapolis Minn
Wm Cheney
Minneapolis Minn
L G Moyer
Montevideo Minn
D T Wheaton
Morris Minn
Carleton College
Northfield Minn
Neil Johnson (Pine River)
Brainerd Minn
B C Finnegan
(Pokegama Falls)
Grand Rapids Minn
Prof O Whitman
Red Wing Minn
Capt F Wherland (Rolling Green) Fairmont Minn
H W Hill
St Charles Minn
L Curry
Sheldon Minn

Mississippi.

Prof J M White
Agricultural College Miss
J M Cox
Batesville Miss
John Osoinach
Bay St Louis Miss
A G Smith
Booneville Miss
E W Bee
Brookhaven Miss
Dr G W Smith-Vaniz
Canton Miss
C W Barber
Edwards Miss
James E Mills
Enterprise Miss
I N Bedford
Fayette Miss
E R Somerville
Greenville Miss
J H Cleveland
Hattiesburgh Miss
Dr F B Shuford
Holly Springs Miss
L Heyman
Kosciusko Miss
Capt C D Koch (Logtown)
Pearlington Miss
B T Webster
Louisville Miss
W E Mollison
Mayersville Miss
W H Hill
Palo Alto Miss
Dr C W Bolton
Pontotoc Miss
Henry C Stevens
Rienzi Miss
Dan McColl
(Ship Island) Biloxi Miss
Prof R B Fulton
University Miss
Dr A J Sanderson
Vaiden Miss
Prof J Reeves
Washington Miss
A Erickson
Water Valley Miss
W S Davis
Waynesborough Miss
W F Coleman
West Point Miss
H C Goosey
Yazoo City Miss

Missouri.

Dr H W Tuttle
Adrian Mo
L T Theilmann
Appleton City Mo
C Hutchinson
Arlington Mo
Miss Nellie A Webster
Austin Mo
L Benecke
Brunswick Mo
Pettit & Welch
Carrollton Mo
Dwight C Hanna
Carthage Mo
Dr M McKenzie
Centreville Mo
H J Sweetland & Co
Chillicothe Mo
W C Wood
Chillicothe Mo
Levi Chubbuck
Columbia Mo
A L McRae
Columbia Mo
Rev Fr Paul
Conception Mo
Henry Miller
Concordia Mo
Wick Morgan
Dadeville Mo
W H Broaddus
Darksville Mo
H M Wollard
Dunnegan Mo
David Sharpe
East Lynne Mo
J H Sharp
Eight Mile Mo
S Newton
Eldon Mo
A Reinisch
Excelsior Springs Mo
Prof T Berry Smith
Fayette Mo
Fred W Duenckel
Forest Park Station
Saint Louis Mo
Wm Muir
Fox Creek Mo
Prof C W Pritchett
Glasgow Mo
L M Bean
Gordonville Mo
H J Clevinger
Harris Mo
A J Sharp
Harrisonville Mo
S W Maushund
Hermann Mo
C B Lane
Jefferson City Mo
S J Spurgeon
2416 E 9th st
Kansas City Mo
S S Stahl
Kidder Mo
W D Wade
Lamonte Mo
Mrs Ida L Joslin
Langdon Mo
M W Serl
Lebanon Mo
J R Eaton
Liberty Mo
E R Graham
Marble Hill Mo
W H Black
Marshall Mo
J D Sanders
Mine La Motte Mo
Max Eimbeck
New Haven Mo
Henry Bruihl
Oak Ridge Mo
Wm Kaucher
Oregon Mo
Sam M Ruley
Oregon Mo
M B W Harman
Pickering Mo
W A McDowell
Platt River Mo
Wm Hirons
Princeton Mo
C B Armstrong
Sarcoxie Mo
Dr J R Mudd
St Charles Mo
L C Saeger
St Charles Mo
Post Surgeon
Jefferson Barracks
Saint Louis Mo
Prof F E Nipher
Washington University
Saint Louis Mo
C G Taylor
Sedalia Mo
J S Chandler
Shelbina Mo
G W Goodlett
(Stellada)
Windsor Mo
Prof J H Frick
Warrenton Mo
J R Dudley
Wither's Mills Mo
Anthony Zeitinger
Zeitonia Mo

Montana.

Will Kennedy
Boulder Valley Mont
S M Corson
Choteau Mont
Post Surgeon
Fort Assinniboine Mont
Post Surgeon
Fort Custer Mont
Post Surgeon
Fort Keogh Mont
Post Surgeon
Fort Missoula Mont
Post Surgeon
(Camp Poplar River)
Poplar Creek Agency Mont
J H Ray
Glendive Mont
R H Clendenin
Martinsdale Mont
Eugene Stark
Virginia City Mont

Nebraska.

Dr W R Lewis
Alliance Nebr
Peter Fowlie
Ansley Nebr
G W Mitchell
Arborville Nebr
G Shedd
Ashland Nebr
G D Carrington
Auburn Nebr
A H Gale
Bassett Nebr
Dr J T Armstrong
Beatrice Nebr
C W Malone
Beaver City Nebr
J F McGauyhey
Brandon Nebr
H N Leach
Burwell Nebr
Dr G Roberts
Creighton Nebr
Prof G D Swezey
Crete Nebr
C E Chadsey
Crete Nebr
G A Loveland
Crete Nebr
Mrs L A Wibley
Culbertson Nebr
E B Taylor
David City Nebr
Chas Seltz
De Soto Nebr
H C Judson
Dunning Nebr
A Dahl
Ericson Nebr
J A Wood.
Ewing Nebr
Dr I Humphrey
Fairbury Nebr
P B Gailord
Fairfield Nebr
Post Surgeon
Fort Niobrara Nebr
Post Surgeon
Fort Omaha Nebr
Post Surgeon
Fort Robinson Nebr
Post Surgeon
Fort Sidney Nebr
J N Bennett
Franklin Nebr
Isaac E Heaton
Fremont Nebr
R B Spear
Geneva Nebr
G S Truman
Genoa Nebr
John P Finley
Gering Nebr
W L Rutledge
Grant Nebr
F A Watson
Grand Island Nebr
Thos B A Watson
Hartington Nebr.
Dr J T Fleming
Harvard Nebr
O F Hartwell
Hastings Nebr
Wm Waterman
Hay Springs Nebr
Dr C M Easton
Hebron Nebr
M E Randolph
Holdrege Nebr
J M Bird
Imperial Nebr
D Henderson Jr
Kimball Nebr
Ira P Griswold
Lexington Nebr
University of Nebraska
Lincoln Nebr
R W Blake
Long Pine Nebr
John Ellis (Marquette)
Central City Nebr
J Hull
Minden Nebr
J B Parmelee
Nebraska City Nebr
D W Hasson
Norfolk Nebr
E W Black
North Loup Nebr
G S Clingman
Oakdale Nebr
A U Morris
O'Neill Nebr
F M Larison
Ough Nebr
C Shieldstream
Palmer Nebr
R D Harris
Paxton Nebr
H Montgomery
Precept Nebr
S Rufus Mason
Purple Cane Nebr
E Smith
Ravenna Nebr
J S Spooner
Sargent Nebr
Sugar Experimental Station
Schuyler Nebr
W J Hayford
Seward Nebr
G H Rogers
Springview Nebr
J M Noyes
Stockville Nebr
S Diller
Superior Nebr
P W Risser
Syracuse Nebr
W L Dunlap
Tecumseh Nebr
Dr A B Nesbit
Tekamah Nebr
W Bardon
Wallace Nebr
G Treat
Weeping Water Nebr
J L Truman
West Hill Nebr
E G Bruner
West Point Nebr
Thos Donegan
Whitman Nebr
Mrs C W Le Bar
Wilcox Nebr
W H Davis
York Nebr

Nevada.

O B Vincent
Austin Nev
A B Shearer
Belleville Nev
G Nicholl
Belmont Nev
Agent C P R R
Beowawe Nev
J G W Mitchell
Candelaria Nev

Prof C W Friend
Carson City Nev
D C Grunow
Carson City Nev
W T Crane
(Cranes' Ranch) Elko Nev
D Fowler
Downeyville Nev
C H Sproule
Elko Nev
J F Cupid
Ely Nev
Frank E Joannes
Eureka Nev
G W Dungan
Genoa Nev
C P Mengel
Hawthorne Nev
Miss Lillian Merrill
(Hot Springs)
White Plains Nev
Agent C P R R
Humboldt Nev
Miss Kate Lewers
(Lewers Ranch)
Franktown Nev
Chas Washeim
Mill City Nev
Agent C P R R
Palisade Nev
Wm Oothout
Palmetto Nev
N P Dooley
Pioche Nev
W J Douglass
Sodaville Nev
Wm E Barney
State Univers'y Reno Nev
Wm Harton
Sunnyside Nev
Mark Averill
Virginia City Nev
C H Gordon
Waubuska Nev

New Hampshire.

F W Palmer
Antrim N H
O F Cole
Berlin Falls N H
Dr Q A Bridges
Berlin Mills N H
Hon W L Foster
Concord N H
M K Gordon
Concord N H
N A Briggs
East Canterbury N H
John M Wilson
Groveton N H
Ag'l Experiment Station
Hanover N H
Dartmouth College Obs'y
Hanover N H
Lake Winipiseogee
Cotton and Woolen M'f'g Co
Lake Village N H
Charles Nurse
Littleton N H
W Little
Manchester N H
Jackson Co
Nashua N H
W C Gale
Newton N H
J L Binford
North Conway N H
Miss Helen M Clark
Plymouth N H
N B Waters
Stratford N H
E A Knowlton
Walpole N H
A A Higgins
West Milan N H

New Jersey.

H Allaire Allaire N J
R Ross
Asbury Park N J
John H Eadie
Bayonne N J
Rev W J Leggett
Belleville N J
Samuel J Hixson
Belvidere N J
Prof C F Richardson
Beverly N J
J H Preston (Billingsport)
Paulsborough N J
E H Freeman
Blairstown N J
H A Jordan
Bridgeton N J
W T Wilson
Bridgeton N J
L M Dye Jr
Camden N J
Dr J F Leaming
Cape May C H N J
Wm C Harris
Dover N J
H Y Postma
Egg Harbor City N J
D H Levy
Franklinville N J
Miss A S Yard
Freehold N J
R N Cornish
Gillette N J
Prof F H Root
Hightstown N J
Dr F C Price
Imlaystown N J
Geo. Fleming
Junction N J
Dr G H Larison
Lambertville N J
W L Lance Jr
(Lancewood)
Whiting N J
G W Hockenbury
Locktown N J
T J Beans
Moorestown N J
John B Collins
Mt Holly N J
F W Ricord
Newark N J
Mrs G H Cook
New Brunswick N J
C V Myers
New Brunswick N J
E W McGann
New Brunswick N J
D L Foster
Newton N J
W Lake
Ocean City N J
Rev S W Knipe
Oceanic N J
J T Probert
Paterson N J
S A Miller
Pochunk Mt
Deckerton N J
S Haines
Rancocas N J
J Fleming
Readington N J
Wm Matlack
Salem N J
Miss A P Sutphen
Somerville N J
Dr W J Chandler
South Orange N J
D T Atwood
Tenafly N J
E R Cook
Trenton N J
Wm W Austin
Vineland N J

New Mexico.

A Knell Albert N Mex
W P Metcalf
(Antelope Spring)
via Chilili N Mex
S Parisis
Bernalillo N Mex
L R E Paulin
Bloomfield N Mex
E A Sutherland
Chama N Mex
J M Fish
Coolidge N Mex
Eulogia Martinez
(Dulce)
Amargo N Mex
T F Blackmore
Eddy N Mex
Pedro Y Jaranello
El Rito N Mex
M G Burkholder
Embudo N Mex
E A Clemens
Estalina Sps (via)
Magdalena N Mex
Henry C Pickles
Folsom N Mex
Post Surgeon
Fort Bayard N Mex
Post Surgeon
Fort Stanton N Mex
Post Surgeon
Fort Wingate N Mex
J E Whitmore
Gallinas Spring N Mex
J E Smith
Hillsborough N Mex
W J B Findley
La Luz N Mex
Richard Pohl
Los Lunas N Mex
E K Caldwell
Monero N Mex
Jose M Vega
Nogal N Mex
S D Webster
Olio N Mex
Jno Bouquet
Pojuaque N Mex
R H Hills (Red Canon)
Carthage N Mex
Wm L McClure
Taos N Mex
F C Buell
Wallace N Mex

New York.

F A Green
Albion N Y
H R Ainsworth M D
Addison N Y
S S Parker
Alabama N Y
Prof F S Place
Alfred Centre N Y
John P Slocum
Angelica N Y
J D Tate
Arcade N Y
Miss Etta E Wilcox
Arkwright N Y
S C Suydam
Baldwinsville N Y
Dr T S Armstrong
Binghamton N Y
Wm H Ross
Brentwood N Y
Dr F A Winne
Brockport N Y
D B Stillman
Brookfield N Y
Post Surgeon Fort Porter
Buffalo N Y
Prof H Priest
Canton N Y
Thomas Manning
Carmel N Y
R Sanford Miller
Constableville N Y
G Pomeroy Keese
Cooperstown N Y
Post Surgeon
Davids Island N Y
William Bolling
Dunkirk N Y
Wm P Hunt
(Eden Centre)
Eden N Y
Gerity Brothers
Elmira N Y
T P Yates
(Factoryville)
Waverly N Y
Robert Warwick
Fleming N Y
Mrs N S Yates
Geneva N Y
Post Surgeon
Fort Hamilton N Y
T M Younglove
Hammondsport N Y
C H Spaulding
Hess Road Station N Y
James Hyatt
(Honeymead-brook)
Bangall N Y
Chas E Whitney
Humphrey N Y
Mrs Jane Pulver
Italy Hill N Y
Engineering Dept
Cornell University
Ithaca N Y
Prof E A Fuertes
Ithaca N Y
Observer Weather Service
Ithaca N Y
J H Bailey
Keene Valley N Y
Henry A Stone (Kingston)
Rondout N Y
Wm L Annin
Le Roy N Y
C S Rice
Lowville N Y
John Forkey
Lyon Mountain N Y
Dr M A Veeder
P O Box 602 Lyons N Y
R S Holmes
(Marshland)
Apalachin N Y
Albert B Johnson
Malone N Y
S Talcott
Middletown N Y
Edward A Smiley
Minnewaska N Y
J E White
Mt Morris N Y
G A Yates
New Lisbon N Y
Director Met'l Observatory
Central Park
New York City
Post Surgeon
Fort Columbus
New York City
C A Wooster
North Hammond N Y
Chas Fenton
Number Four N Y
J P Davis
Oxford N Y
E B Bartlett
(Palermo)
Vermillion N Y
G H Hudson
Plattsburgh N Y
Post Surgeon
Plattsburgh Barracks N Y
Prof John M Dolph
Port Jervis N Y
W H Jeffers
(near Perry City)
Trumansburgh N Y
G W F Smith
Potsdam N Y
Vassar College Obs'y
Poughkeepsie N Y
Wm Weaver
Quaker Street N Y
J H Caryell
Romulus N Y
Post Surgeon
Madison Barracks
Sackett's Harbor N Y
Selah B Strong
Setauket N Y
Rev Charles Simpson
Sherman N Y
James E Wilson
South Canisteo N Y
D C Sharpe
South Kortright N Y
Post Surgeon
Ft Wadsworth Rosebank
Staten Island N Y
Prof H A Peck
Syracuse N Y
R T Church
Turin N Y
Thomas Birt Utica N Y
M F White
Victor N Y
George A Fairbanks
Watertown N Y
Rev Dwight W Smith
Watkins N Y
O F Corwin
Wedgwood N Y
Post Surgeon
Fort Schuyler
West Chester N Y
Post Surgeon
Military Academy
West Point N Y
Post Surgeon
Watervliet Arsenal
West Troy N Y
Post Surgeon
Willets Point
Whitestone N Y
Prof O R Willis
White Plains N Y
Post Surgeon
Fort Niagara
Youngstown N Y

North Carolina.

Dr Karl von Ruck
Asheville N C
J H Greene
Bakersville N C
Prof J W Gore
Chapel Hill N C
H C Dunn
Concord N C
T B Lindsley
Douglas N C
L Crawford
Franklin N C
Prof Richard H Lewis
Hendersonville N C
Dr T G Harbison
Highlands N C
Dr R L Beall
Lenoir N C
W J Scroggs
Lexington N C
E P Holcomb
Linville N C
L W Bagley
Littleton N C
Prof S D Bagley
Louisburg N C
Prof J C Johnson
Madison N C
Dr P L Murphy (Insane Asy)
Morganton N C
Prof H T J Ludwig
Mt Pleasant N C
J W Ashby
Mt Airy N C

Prof Geo S Wills
Oak Ridge N C
Prof A H Merritt
Pittsborough N C
T C Harris
Raleigh N C
Dr Herbert B Battle
Raleigh N C
C F von Herrmann
Raleigh N C
J A Hedrick
Salisbury N C
Robt P McAnally
(Saxon)
Madison N C
R J Noble
Smithfield N C
H L Kimrey
Soapstone Mount N C
Dr G H Saddleson
Southern Pines N C
J L Hayward
Wadeville N C
Dr J M Gallagher
Washington N C
T A Clark
Weldon N C
H Clay Williams
Willeyton N C

North Dakota.

H B Walton
Carrington N Dak
H W Davis
Church's Ferry N Dak
J W Leach
Davenport N Dak
Chas Ackley
Ellendale N Dak
Prof E F Ladd
Fargo N Dak
Post Surgeon
Fort Buford N Dak
Post Surgeon
Fort Pembina N Dak
Post Surgeon
Fort Totten N Dak
Post Surgeon
Fort Yates N Dak
S J Pound
Gallatin N Dak
F L Davies
Grafton N Dak
H H Mott
Grafton N Dak
N S French
Grand Rapids N Dak
Leo L Lang
Hope N Dak
John H Fried
Jamestown N Dak
L C Stanford
Kelso N Dak
A M Tofthagen
Lakota N Dak
Julius H Hoof
Napoleon N Dak
A H Keene
New Ehgland City N Dak
J A Power
Power N Dak
F R Hill
Steele N Dak
Chas R Lyman
St Johns N Dak
G S Hagen
St Thomas N Dak
Hon J J Dobbin
Valley City N Dak
C A McKean
Wahpeton N Dak
Peter Ross
Wild Rice N Dak
Peter M Cudhie
Willow City N Dak
C L Thomson
Woodbridge N Dak

Ohio.

H V Egbert
Akron Ohio
Dr P H Clark
Ashland Ohio
Prof Eli Dunkle
Athens Ohio
S M Painter
Bangorville Ohio
Frank E Fitch
Bellevue Ohio
P W Barton
Bement Ohio
C F Stokey
Canton Ohio
Prof W F McDaniel
Celina Ohio
E T M Williams
Clarksville Ohio
G A Hyde
85 Kennard st
Cleveland Ohio
Post Surgeon
Columbus Barracks
Columbus Ohio
Prof B F Thomas
Columbus Ohio
C M Strong
Columbus Ohio
W H Baker
Ohio State University
Columbus Ohio
Mrs Edith E L Boyer
Dayton Ohio
B R Ault
Demos Ohio
A C Beardsley
Ellsworth Ohio
C W Goodspeed
Elyria Ohio
Prof A C Redding
Findlay Ohio
S M Luther
Garrettsville Ohio
Dr T W Gordon
Georgetown Ohio
Prof A D Cole
Granville Ohio
W B Longstreth
Gratiot Ohio
C G Katzenberger
Greenville Ohio
James Bull
Hanging Rock Ohio
D G Lewis
Hassan Ohio
Prof G H Colton
Hiram Ohio
Prof N B Hobart
Hudson Ohio
Dr J B Owsley
Jacksonborough Ohio
L J Demarest
Kenton Ohio
Dr James Little
Logan Ohio
W S Dean
Lordstown Ohio
Prof T D Briscoe
Marietta Ohio
E H Raffensberger
Marion Ohio
C H Morris
McConnelsville Ohio
Simon Waterson
Montpelier Ohio
Dr T C Hunter
Napoleon Ohio
Jos A Hook
New Alexandria Ohio
Dr A M Beers
New Comerstown Ohio
H D Gowey
North Lewisburgh Ohio
Prof F F Jewett
Oberlin Ohio
E U Hyde
Orangeville Ohio
Dr D N Allard
Pomeroy Ohio
Dr D B Cotton
Portsmouth Ohio
W N Cowden
Quaker City Ohio
George Olinger
Springborough Ohio
Prof T H Sonnedecker
Tiffin Ohio
Dr A Billhardt
Upper Sandusky Ohio
Prof C W Williamson
Wapakoneta Ohio
Thomas Mikesell
Wauseon Ohio
D Lorbach
Waverly Ohio
E B Michener
Waynesville Ohio
Prof J Haywood
Westerville Ohio
L S Motte
West Milton Ohio
Dr F Young
Weymouth Ohio
Mrs E P Wheeler
Wheeler Ohio
Dr O N Stoddard
Wooster Ohio
A G Frost
Youngstown Ohio

Oklahoma.

A R Henderson
Buffalo Okla
Post Surgeon
Fort Reno Okla
Post Surgeon
Fort Sill Okla
Morris Collar
Guthrie Okla

Oregon.

John Briggs
Albany Oregon
James W Smith
Arlington Oregon
F H Carter
Ashland Oregon
T P Page
Athena Oregon
Geo Bennett
Bandon Oregon
T L Arnold
Beulah Oregon
U S Engineer Officer
Cascade Locks Oregon
State Agr'l College
Corvallis Oregon
John Macdonald
Deer Island Oregon
Dr G Wigg
East Portland Oregon
Thos Pearce
Eola Oregon
Prof S E McClure
State University
Eugene Oregon
Pacific University
Forest Grove Oregon
J S Gray
Gardiner Oregon
Oliver T Snyder
Gooseberry Oregon
J B Paddock
Grant's Pass Oregon
J H Neal
(Happy Valley)
Diamond Oregon
W O Royce
Hardman Oregon
A Smith
Heppner Oregon
Dr P G Barrett
Hood River Oregon
W H Goudy
Hubbard Oregon
P Britt
Jacksonville Oregon
W F White
(John Day Junction)
Wagner Oregon
J D McCully
Joseph Oregon
Marshall B Johnson
Jordan Valley Oregon
S C Beach
Lake View Oregon
J K Romig
La Grande Oregon
W H Colwell
Lone Rock Oregon
Capt W Harris
McMinnville Oregon
Rev Dr Urban Fisher S J
Mount Angel Oregon
Edmund Robinson
Newberg Oregon
Dr H J Fuller
New Bridge Oregon
J H Zohner
Pendleton Oregon
B S Pague
Portland Oregon
F M Chrisman
(Silver Lake)
Prineville Oregon
W C Cusick
Telocaset Oregon
S L Brooks
The Dalles Oregon
Dr H W Vincent
Toledo Oregon
G W Dalles
Vernonia Oregon
M A Baker
Weston Oregon

Pennsylvania.

Dr C B Dudley
Altoona Pa
J Grathwohl
Blooming Grove Pa
A H Boyle
Blue Knob Pa
J E Pague
Carlisle Pa
Miss E A G Apple
Charlesville Pa
W T Gordon
Coatesville Pa
M H Boye
Coopersburgh Pa
Wm Loveland
Corry Pa
T H Walton
Doylestown Pa
Theo Day
Dyberry Pa
Dr J W Moore
Easton Pa
C F Sweet
Edinborough Pa
T B Lloyd
Emporium Pa
J C Hilsman
(Forks of Neshaminy)
Rush Valley Pa
G W Wood
Frederick Pa
E C Wagner
Girardville Pa
N Moore
Grampian Hills Pa
Wm Swipe
Hamburg Pa
Dr T B Orchard
(Salem Corners)
Hamlinton Pa
Prof F P Leavenworth
Haverford College Pa
Prof J A Stewart
Hollidaysburgh Pa
John Torrey
Honesdale Pa
L P Townsend
Hulmeville Pa
Prof W J Swigart
Huntingdon Pa
E C Lorentz
Johnstown Pa
B P Kirk
Kennett Square Pa
R J Mickey
Kilmer Pa
Lewis T Lampe
Lancaster Pa
H L Shull
Lansdale Pa
G W Hayes
Lebanon Pa
Geo W T Warburton
Le Roy Pa
F O Whitman
Lewisburgh Pa
Howard Miller
Lewisburgh Pa
J T Ambrose
Ligonier Pa
Prof J A Robb
Lock Haven Pa
O V Metzger
(Aqueduct)
Logania Pa
J J Boyd
Mauch Chunk Pa
Thos F Sloan
McConnellsburgh Pa
J & B H Metcalf
Meadville Pa
Stephen S Jenkins
Meshoppen Pa
W T Butz
New Castle Pa
Dr Geo M Grim
Ottsville Pa
J D Brennan
Pleasant Mount Pa
Chas Moore
Pottstown Pa
John E Codman
Bureau of Water
Philadelphia Pa
John Comly
1529 Centennial Ave
Philadelphia Pa
Post Surgeon
Frankford Arsenal
Philadelphia Pa
T F Townsend
Philadelphia Pa
Franklin Institute
Philadelphia Pa
Knowles Croskey
Phœnixville Pa
Post Surgeon
Allegheny Arsenal
Pittsburg Pa
R C Stover
Point Pleasant Pa
J L Heacock
Quakertown Pa
Franklin Yager
Reading Pa
J A Roth
Seisholtzville Pa
J M Boyer
Selin's Grove Pa
Armstrong & Brownell
Smethport Pa
Geo Lowder
(Smith's Corners)
Point Pleasant Pa
W M Schrock
Somerset Pa
B M Hall
South Eaton Pa
Prof Wm Frear
State College Pa

Prof Susan J Cunningham
Swarthmore Pa
M Gustin
Troy Pa
Wm Hunt
Uniontown Pa
H D Deming
Wellsborough Pa
Dr J C Green
West Chester Pa
Prof W F Wickersham
Westtown Pa
A W Betterly
Wilkes Barre Pa
Chas Beecher
Wysox Pa
Mrs L H Grenewald
York Pa

Rhode Island.

N G Herreshoff
Bristol R I
N Helme
Kingston R I
Agr Exp Station
Kingston R I
G W Pratt
Lonsdale R I
Post Surgeon
Fort Adams Newport R I
C H Cannon
Olneyville R I
J H Walker
Pawtucket R I
Office City Engineer
Providence R I
Ladd Observatory
Providence R I
D W Hoyt
Providence R I

South Carolina.

Dr W H Geddings
Aiken S C
W G Peterson (Belmont)
Newberry S C
P W Scott
Brewer Mine S C
W R Godfrey
Cheraw S C
Hon A P Butler
Columbia S C
Observer Weather Service
Columbia S C
M P Daggett
Conway S C
J W Earl (Evergreen)
Holland's Store S C
J P McNair
Kitchings Mills S C
H D Elliott
Port Royal S C
Miss N L Dawson
Simpsonville S C
J J Lucas
Society Hill S C
Dr W W Anderson
Statesburgh S C
E Gillard
Trial S C
H G Reid
Walhalla S C
J Pagan
Winnsborough S C
J R Schorb
Yorkville S C

South Dakota.

A H Olwin
Aberdeen S Dak
W S Hill
Alexandria S Dak
E A Cooper
Britton S Dak
Prof Louis McLouth
Brookings S Dak
W F Van Dervort
Castlewood S Dak
W H Boals
Clark S Dak
Thomas H Ruth
De Smet S Dak
Isaac Killian
Elkton S Dak
F J Cross (Cross)
'Etta Mine S Dak
G A Perly
Flandreau S Dak
M K Judy
Forestburgh S Dak
Henry J Eidam
Forest City S Dak
Post Surgeon
Fort Bennett S Dak
Post Surgeon
Fort Meade S Dak
Post Surgeon (Fort
Randall) Armour S Dak
Post Surgeon
Fort Sully S Dak
Wm B Tapley
Frankfort S Dak
Dr W H Gates
Gary S Dak
A E Van Camp
Highmore S Dak
R S Person
Howard S Dak
S W Glenn
Huron S Dak
A S Stuver
Kimball S Dak
D W Diggs
Millbank S Dak
J E Gilbert
Mitchell S Dak
J W Strouse
Oelrichs S Dak
Mrs M F Goddard
Onida S Dak
Robert R Woodward
Parker S Dak
J S Headley
Parkston S Dak
Newton W Gilbert
Plankinton S Dak
E S Carter
Sioux Falls S Dak
J H Warren
Spearfish S Dak
S C Butterfield
St Lawrence S Dak
H Richmond
Tyndall S Dak
Harvey M Russ
Wessington Springs S Dak
G W Fink
Wolsey S Dak

Tennessee.

Miss Ella Wallace
Andersonville Tenn
Rev C F Williams
Ashwood Tenn
P B Calhoun
Austin Tenn
Miss Daisy Bell
Bethel Springs Tenn
G W Martin
(Missionary Ridge)
822 Cherry Street
Chattanooga Tenn
Prof J A Lyons
Clarksville Tenn
J I Hall
Covington Tenn
L Boynton
Dunlap Tenn
J C Diemer
Fayetteville Tenn
C F Vanderford
Florence Station Tenn
Dr John A Campbell
Franklin Tenn
W H Brown
Greeneville Tenn
J W Ayers
Harriman Tenn
R Downey
Hohenwald Tenn
W C Hall
Jacksboro Tenn
Hon T C Long
Jackson Tenn
W J Inman
Kingston Springs Tenn
A B Ewing
Lewisburgh Tenn
Dr J L Colquitt
Livingston Tenn
J H Burrow
Lynnville Tenn
C Hawkins
McKenzie Tenn
Fred T Fisher
McMinnville Tenn
Dr J D Plunket
Nashville Tenn
H C Bate
Nashville Tenn
Dr L W Hooper
Newport Tenn
W C Thompson
Nunnelly Tenn
J C Williamson
Parksville Tenn
Ruskin Ferguson
Riddleton Tenn
Miss C M Nugent
Rogersville Tenn
Dr W F G Wilson
Rugby Tenn
C L Hofner
Savannah Tenn
W J Breeding
Spring Dale Tenn
B P Fagan
Sharp Tenn
A S Curry
Trenton Tenn
Miss Nora Williams
Union City Tenn
Dr C Buchanan
Waynesborough Tenn

Texas.

Dr Q C Smith
Austin Tex
Ernest Kruger
Austin Tex
Geo F Townsend
Austin Tex
W H Potter (Bear Creek)
Brady Tex
K D Blankinship
Berlin Tex
A D Oliver
Big Spring Tex
H Stevens
Brazoria Tex
J G Sloan
Brenham Tex
Prof C S Newhall
Brownwood Tex
W M Spitler
Burnett Tex
G H Chipman
Childress Tex
W G Minor
Coldwater Tex
Prof Duncan Adriance
College Station Tex
W A Crowder
Colorado Tex
J S Rogers
Columbia Tex
W H Hamilton
Box 169 Corsicana Tex
E L Gibson
Corsicana Tex
Anthony Blum
Durham Tex
J C Edgar
Duval Tex
H Graves
Epworth Tex
Post Sugeon
Ft Bliss El Paso Tex
Post Surgeon
Ft Brown Brownsville Tex
Post Surgeon
Ft Clark Brackettville Tex
Post Surgeon
Camp Eagle Pass Tex
Post Surgeon
Ft Hancock Tex
Post Surgeon
Ft McIntosh Laredo Tex
Post Surgeon
Camp Pena Colorado
Marathon Tex
Post Surgeon Ft Ringgold
Rio Grande City Tex
A Striegler
Fredericksburgh Tex
D T Ragsdale
Gainesville Tex
Lum Woodruff
Gallinas Tex
D D Bryan
Galveston Tex
I M Cline
Galveston Tex
A B Gant
Graham Tex
W J Crowley
Grapevine Tex
Dr Chas W Croft
Hansford Tex
F Lusby
Hartley Tex
P D Sanders
Haskell Tex
J P Oberholser
Haymond Tex
D R Sanders
Houston Tex
W T Barr
Huntsville Tex
John Brownrigg
(Kent) Fort Davis Tex
Hugo Lehman
La Grange Tex
G W Krech
Longview Tex
J E Fisher
Luling Tex
J L Vaughan
Merkel Tex
Louis Runge
Menardville Tex
S G Lackey
Mesquite Tex
E J Stephens
Midland Tex
Dr J C Riley
Mountain Spring Tex
Capt Julius Geisecke
New Braunfels Tex
C Runge
New Ulm Tex
Miss Carrie Roberts
Panhandle Tex
E H Snider
Panter Tex
Robert Henry
Quanah Tex
Hamilton Foster
Roby Tex
Thos Wood
Round Rock Tex
Chas R Brown
San Angelo Tex
Post Surgeon
San Antonio Tex
T A Connor Sanderson Tex
W S Grace
Sanderson Tex
G H Hutchins
Sierra Blanca Tex
R MacNutt
Sierra Blanca Tex
C M Tilford
(Silver Falls)
Mt Blanco Tex
A C Wilmuth
Snyder Tex
W Goodrich Jones
Temple Tex
J B Harman
Van Horn Tex
Charles F Mercer
Venus Tex
W H Godber
Waco Tex
W B Slack
Weatherford Tex
Dr O Eastland
Wichita Falls Tex

Utah.

Miss Hattie E Farnsworth
Beaver Utah
Post Surgeon
Fort Du Chesne Utah
B F Cooke
Grouse Creek Utah
William Brown
Levan Utah
J H Walker
Utah Exp Sta
Logan Utah
E Caffall
Losee Utah
R Moncur
Mt Carmel Utah
H C Davidson
Mt Pleasant Utah
H Crouse
Moab Utah
W R May
Nephi Utah
W W Crossman
Ogden Utah
Alex Matheson
Parowan Utah
T H Martin
Provo City Utah
George Hales
Richfield Utah
Seth A Pymm
St George Utah
Post Surgeon
Fort Douglas
Salt Lake City Utah
J Robbins
Snowville Utah
James Hughes
Stockton Utah

Vermont.

W H Childs
Brattleboro Vt
W B Gates
55 Elmwood Avenue
Burlington Vt
H L Bixby
Chelsea Vt
C H Lane
Cornwall Vt
J H Mears
Enosburgh Falls Vt
E A English
Hartland Vt
J W Hatch
Jacksonville Vt
Dr H A Cutting
Lunenburgh Vt
H F J Scribner
Strafford Vt
A Whitehead
Vernon Vt

B H Albee
Weathersfield Vt

Virginia.

J W Fox Sr
Big Stone Gap Va
W N Stone
Bedford City Va
C R Moore
Birdsnest Va
J C Dabney
Blacksburgh Va
O A Brown
Cape Charles Va
George Williams
Casanova Va
W W Ragan
Christiansburgh Va
D A Heatwole
Dale Enterprise Va
Post Surgeon
Fort Monroe Va
Post Surgeon
Fort Myer Va
Washington D C
Prof H D Campbell
Lexington Va
A T Lincoln
Marion Va
R V Gaines
Mossing Ford Va
G Dunn
Nottoway Va
Prof J M Colson Jr
Petersburgh Va
W H Pleasants
Richmond Va
Prof S C Wells
Salem Va
W N Parrott
Stanardsville Va
W C Hedrick
Staunton Va
J R Sim
Summit Va
H G Wadley
Wytheville Va

Washington.

O H Turner
Aberdeen Wash
R M Hoskinson
Madrone Wash
W H Mossman
Chehalis Wash
Charles Johnson
Chelan Wash
S B L Penrose
Dayton Wash
R C Willis
Doe Bay Wash
Rev S R S Gray
East Sound Wash
Post Surgeon
Fort Canby Wash
care Astoria Oregon
Dr A Wilgus
Fort Simcoe Wash
Post Surgeon
Fort Spokane
Miles Wash
Post Surgeon
Fort Townsend
Port Townsend Wash
Post Surgeon
Fort Walla Walla Wash
D Pullen
Lapush Wash
Samuel Storrow
(Moxee Valley)
North Yakima Wash
C P Culver
Tacoma Wash
Post Surgeon
Vancouver Barracks Wash
Mrs C B Carpenter
Vashon Wash
R W Starr
Waterville Wash

West Virginia.

Henry Resseger
Ella W Va
Levi Johnson
Glenville W Va
J E Murdock
Kingwood W Va
D Titchenell
Pleasant Hill W Va
G H Trembly
Tannery W Va
F M Swann
Tyler's Creek W Va
Christian Schnepf
Wheeling W Va

Wisconsin.

A J Smith
Amherst Wis
Herman F Lueder
Appleton Wis
Wm Toole
Baraboo Wis
E W Pierce
Barron Wis
F W Denison
Bayfield Wis
F H Crane
Beaver Dam Wis
E G Longcroft
Berlin Wis
L M Burt
Black River Falls Wis
John J Metzgar
Butternut Wis
B C Curtis
Cadiz Wis
R C Worthington
Centralia Wis
John Erb
Columbus Wis
Hon John Masbaum
Crandon Wis
A E Brainerd
Cumberland Wis
Joseph G Lawton
De Pere Wis
Samuel M Reese
Dodgeville Wis
W N Sloane
Eau Claire Wis
A Combacker
Ellsworth Wis
A Deihl
Elroy Wis
J E Breed
Embarrass Wis
John Halter
Florence Wis
J C Wedge
Fond du Lac Wis
W J Egbert
Hammond Wis
S N D Smith
Harvey Wis
Horatio C Flagg
Hayward Wis
E V Wernick
Hillsborough Wis
J A McIntosh
Honey Creek Wis
E B Heimstreet
Janesville Wis
N A Pennoyer
Kenosha Wis
E S Koepenick
Koepenick Wis
Edward Pollock
Lancaster Wis
A J Looze
Lincoln Wis
Washburn Observatory
Madison Wis
Miss Anna Lups
Manitowoc Wis
C H Grole
Mauston Wis
J H Treat
Meadow Valley Wis
Dr F Robert Zeit
Medford Wis
A Pillsbury
Menomonie Wis
Wm Heaslett
Neillsville Wis
Aug A Paulsen
New Holstein Wis
John Bender
Oconomowoc Wis
W K Smith
Oconto Wis
C W Staples
Osceola Mills Wis
R S Albee
Oshkosh Wis
D E Cameron
Pepin Wis
Rev E M Corey
Peshtigo Wis
F W Sackett
Phillips Wis
Robert Barnsdale
Plover Wis
L Cornelius
Prairie du Chien Wis
C W Guldager
Rhinelander Wis
Col W S Wood
Shawano Wis
Prof J A Jeffrey
Shell Lake Wis
J W Livingston
Sparta Wis
F W Alexander
Viroqua Wis
Chas J Salick
Watertown Wis
Robert Reynolds
Weston Wis
W Phillips
Westfield Wis
H Scott
Whitehall Wis

Wyoming.

Ira B Moor
Evanston Wyo
Wm Werner
Fort Fetterman Wyo
Post Surgeon
Fort Russell Wyo
Post Surgeon
Fort McKinney Wyo
Post Surgeon
Camp Pilot Butte
Rock Springs Wyo
Post Surgeon
Fort Yellowstone
Mammoth Hot Springs Wyo
Post Surgeon
Fort Washakie Wyo
J D Parker
Saratoga Wyo
J A Becher
Sheridan Wyo
R H Williams
(Grand View)
Sundance Wyo
Dr L S Barnes
Laramie Wyo
Prof B C Buffum
Laramie Wyo
J S Meyer
Lander Wyo
F S Lusk
Lusk Wyo
Sundance Exp Farm
Sundance Wyo
M R Johnston
Wheatland Wyo

Foreign.

Prof J Bolam
Govt Naviga School
14 Dock Place
Leith Scotland
Dr C F Hering
Burnside (Coronie)
Colony of Surinam
Dutch Guiana S A
G J Gibbs
Grand Turk
Turks Islands Brit W I
Director
Meteorological Obs'y
Guanajuato Mexico
Gen Russell Hastings
Hamilton Bermuda
Prof M Leal
Leon
Guanajuato Mexico
Director
Astro and Met'l Obs'y
Mazatlan Mexico
Director Cen Met Obs'y
City of Mexico Mexico
George Matson
Topolobampo
Sinaloa Mexico
Prof G Baturoni
Vera Cruz Mexico
Prof C H McLeod
McGill College Obs'y
Montreal Canada
Prof P Scherer
Meteorological Obs'y
Port au Prince Hayti
Director Catholic Institute
Pueblo Mexico
H Patrick
La Logia
Sinaloa Mexico
J Higgins
Saint Johns Newfoundland
Curtis J Lyons
Honolulu
Hawaiian Islands
Rafael Junquera
Santiago de Cuba
G Murdock
St Johns
New Brunswick
Dr Enrique del Monte
Calle 9 No 42 Vedado
Havana Cuba
Jos Ridgeway
St Thomas Danish W I
E Baynes Reed
Esquimault B C